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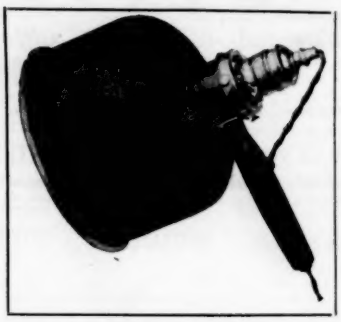

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Hastings Lecture

[ABSTRACTED]

ON

CANCER AND HOW TO FIGHT IT.

Delivered before the British Medical Association on Jan. 24th, 1927,

BY SIR BERKELEY MOYNIHAN, BART., K.C.M.G., C.B., M.S. LOND.,

SENIOR SURGEON, LEEDS GENERAL INFIRMARY; PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

A SURVEY of the progress of medicine during this century shows that we are, little by little, but very surely, obtaining control over certain diseases which were formerly the plagues of mankind. In comparison with them cancer not only shows no decrease, it is actually gaining ground. In the last 20 years the general death-rate has fallen by 32 per cent., the infant death-rate by 45 per cent., the tuberculosis death-rate by 38 per cent., while the cancer death-rate has increased by 20 per cent. In the last 70 years the mortality from cancer has increased five-fold.

Attempts have been made to explain this increase (*a*) by consideration of the fact that the average expectation of life having increased, a larger number of people live to the cancer age, and (*b*) by ascribing it to increased accuracy of diagnosis. To some extent both explanations are true. But the average duration of life is longer chiefly because of the lower infant mortality. Dr. Leonard Hill says:—

"The expectation of life has gone up for infancy but not for the period of late middle age. There is no problem of what we are to do with our grandfathers, they are living scarcely any longer than they did 50 years ago."

And if we pay regard to those cases in which diagnosis can never have been difficult, because the disease was near the surface and easily seen or felt, we find that the second argument is not sustained. For example, in cancer of the tongue there has been an increase of 39 per cent., and in cancer of the breast of 28 per cent. in the last 20 years. It must also be remembered that some few diseases called cancerous in other days are now known to be simple.

BELATED SURGICAL TREATMENT.

This increased mortality from cancer, chiefly in the alimentary canal, has occurred despite the fact that more people than ever are being cured of cancer. The operations practised to-day are more frequent, of greater extent, of greater safety, and attended by a larger measure of permanent relief from the disease than was the case 20 years ago. Montaigne thought the doctor among the most fortunate of beings, because the sun shone upon his successes, while his failures were buried in the tomb. But this is not altogether true. We hear of deaths from operations, of recurrence of cancer after its removal; we hear little even from the rescued of their freedom from this disease.

If it is true, as it is indubitably true, that permanent relief from cancer is being secured by our present methods in large numbers of cases, the question naturally arises as to why this is not more often possible. We are all a little to blame. Medical men are sometimes, though I am glad to think not very often, inclined to watch the earlier phases of this disease, especially when attacking internal organs, until it is certain that the condition is malignant. The certainty of diagnosis is often the certainty of death. If we wait until we know, we wait until we cannot cure. And the public is in part to blame, for among them there is great ignorance of the possibilities and the achievement of surgery, and ignorance is the parent of unbelief. The patient who discovers, say, a tumour in the breast says to herself: "There is something wrong here; it may be cancer; if it is cancer I must undergo an operation; if I do I may die; if I survive the disease may come back; if it returns I must submit once again to operation with all its risks—even then the disease may recur; it is a hopeless and depressing prospect. I had better not mention the fact of the lump." At last she submits to a rescue operation when the chances now are all against the surgeon.

Unhappily, it is not very infrequent for the delay to be encouraged by the wasteful trial of other methods. The "cancer curer" is still a curse in the land, and the most pathetic credulity as to his claims is shown by people who should know better. Cancer never yet was cured by the quack, but infinite harm has come to patients from the delay which foolish, impotent, and pernicious practices have involved.

EDUCATION AND FEAR.

Cases of cancer may conveniently be divided into (1) those in which the growth is lying either on or near the surface of the body, or is attacking organs or parts of organs which can with no great difficulty or danger be removed; and (2) those in which the growth is relatively inaccessible, lies out of sight, cannot be felt, and only reveals its presence by symptoms, or after examination by X rays. In these cases an operation may be difficult, impracticable, or even impossible.

It is obvious that two methods of attack must be followed. In the first place we must so instruct the public and educate ourselves that those cases of cancer in which complete eradication of the disease is surgically possible shall be recognised and treated at the earliest moment. The operations now practised have almost reached their limits not only in their extent and in the safety with which they can be performed by expert surgeons, but also in respect of the pain or discomfort they inflict. We can make surgery safe and even more successful, not by strengthening the arm of the surgeon, but by enlisting the help of the patient; by encouraging him with the knowledge that accessible growths are capable of complete removal, with small risk, and with permanent freedom from recurrence, if only they can be reached in time. And in the second place we must carry out all manner of research so that inaccessible cancer shall also be treated with success or even prevented.

With regard to the education of the public there are certain disadvantages, some fanciful, some real. It is said that if we "talk cancer" we shall make people "think cancer." We hope that is true. We do not wish the public to "forget cancer" For cancer is an unforgiving enemy; and once he has settled upon his victim he never for one single moment ceases to grow, and the sooner you confront your foe the better for you and the worse for him. It is said that we shall increase fear. That I firmly believe is impossible. If we can help the public to learn that it is not cancer, but ignorance with regard to cancer, that is in part responsible for their horror of it, and if we can assure them that cancer under certain conditions and when attacking certain organs is capable of complete removal with permanent freedom from a return of the disease, shall we not be able to diminish or even to banish this horror? Fear should be the fear of delay; the fear lest a simple disease may become cancerous; the fear lest a local and, therefore, curable cancer should increase until it becomes generalised and incurable. Knowledge will bring freedom from fear.

Two consecutive events must be secured: the awakening in the patient's mind of a need to consult the doctor, and action by the doctor, who, in turn, seeks aid from the surgeon. Unless, therefore, a patient knows something of the antecedent conditions of cancer, of its early manifestations, of the importance of early treatment, how is he to realise that a medical man should be consulted without the delay of one single day?

WHAT THE PUBLIC SHOULD BE TAUGHT.

The following are some of the truths it is important for the public to know:—

(1) Cancer is always at first a local disease, spreading by direct extension from the spot first affected. It

is often supposed that cancer is a "blood disease"—that the blood is contaminated and that the local evidence of this is the nodule or the ulcer, recognised as cancerous. All knowledge we possess refutes this view.

(2) Cancer chooses to attack a diseased rather than a healthy organ. This involves the necessity for us all to pay attention to health and to do all we can to keep fit. The majority of people, it may be said, commit suicide.

(3) The occurrence of cancer is influenced by antecedent conditions. Chronic irritation is a definite precursor of cancer, as is seen especially upon exposed surfaces.

(4) The occurrence of cancer, so far as we know, is uninfluenced by certain factors sometimes regarded as "causes"—

(*a*) There does not appear to be any *hereditary predisposition* to cancer. The fact that one person in seven over the age of 30 dies from cancer implies that within the limits of slight variation from this normal the incidence in any family may appear to be unduly heavy. Probably few families of ordinary size escape cancer in three consecutive generations. The work of Miss Maud Slye upon mice appears to show that a tendency to the development of cancer can be engendered by special breeding, but I cannot recognise any similar liability in man.

(*b*) Cancer, so far as we know, is not caused by any *special food* or foods, nor by any absence of special foods. It is true that excessive indulgence in food when little or no exercise is taken will steadily and insidiously depreciate the general health, and that in such circumstances of lessened resistance a person may more easily fall a victim to cancer as to other diseases. Various articles of diet have been impugned—tomatoes, fresh meat, salt, and many other—but there is no evidence that would satisfy a scientific mind that these or any other articles of diet, in excess or in abstinence, play any specific part in causing this disease. So far as we know, no change in the natural history of a malignant growth has ever been observed by competent authorities to result from such dietetic control in an indisputable case of carcinoma.

(*c*) There is at present no sufficient proof that *cancer-houses* or cancer-districts exist, though further inquiry may well be conducted to resolve this question.

(5) The disease is neither infectious nor contagious

(6) In the early stages cancer rarely causes pain. In tumours of the breast, for instance, no pain, as a rule, is caused until the skin is involved; the lump is discovered by accident, and little regard is paid to it because it causes no inconvenience or discomfort. The truth that in women over 35 years of age a lump in the breast is malignant in three cases out of four needs all the repetition and emphasis that can be given to it. The silence of some forms of growth in the stomach and the rectum is notorious, and in the alimentary canal it is often obstruction rather than discomfort that first attracts attention. In cases of cancer, ill-health, anæmia, lassitude, distaste for food, and loss of weight are often regarded as the symptoms without which a diagnosis may hardly be made, but the existence of carcinoma is compatible with perfect health, and there may even be a gain in weight and a remarkable feeling of vigour and strength.

(7) While the disease is local and when the growth is accessible cancer is curable. While the disease is local the complete eradication not only of the part immediately involved, but of all the adjacent parts which are most likely to be first implicated in its extension would also cure the disease. In a large number of cases, however, the growths are not accessible or lend themselves only to the most dangerous and least successful forms of surgical attack.

THE CONTROL AND TREATMENT OF CANCER.

If a growth is accessible and local, no other method than that of operation should be considered. The difficulty is to discover whether the disease at the time the removal of the growth is contemplated remains localised, or whether it has already extended to the primary glands, or perhaps has even spread beyond them. Nothing could more clearly show the advantages of early operation than the statistics collected from the Leeds cases by Miss Gretta Wardle, under the auspices of the Leeds Cancer Committee, and published by the Ministry of Health.

The report deals with 357 cases in which the tumour was submitted to microscopic examination. Dr. Janet Lane Claypon classified them on the following basis: (Class I.: Cases in which, so far as could be ascertained, the growth was entirely confined to the breast, the axillary glands not being involved. Class II.: Cases in which the axillary glands were already invaded, but in which there was no evidence of involvement of any other neighbouring or distant organ or tissue. Class III.: Cases in which either the adjacent or distant organs or tissues are involved—e.g., the pectoral muscles, the skin when ulcerated, the cervical glands, the opposite breast, &c.

Excluding cases unclassified on account of insufficient clinical and pathological data, the following are the results of operation after three, five, and ten years respectively:—

	Percentage alive at—		
	3 years.	5 years.	10 years.
Class I.	89·6	85·1	71·4
,, II.	36·3	18·5	5·2
,, III.	28·0	13·5	5·6

These and other figures given in the report prove that cancer can be completely eradicated if the local growth is early and widely extirpated. They show that the degree of success depends upon the stage of the disease attacked by the operation. If, however, the growth is inaccessible, or become disseminated, then no operation can eradicate it, and recourse must be had to other methods. Of these, by far the f valuable is the therapy of the deep X rays. F their skilled application the most remarkable resu are occasionally observed. The retrogression of th disease, or even its disappearance for two or three years, do not justify the use of the word "cure." Though we have seen the most striking results—results which five years ago could not have been believed possible—we have never seen a patient "cured" by this treatment. The best testimony to the truth of this view of X ray work is shown by the refusal or reluctance of the skilful radiologist to undertake treatment in any case in which surgical measures are possible. This means that only the cases in which surgery can do nothing are undertaken by the radiologist; and yet it is in these very advanced and otherwise hopeless cases that results are obtained which show the efficacy of the method. In certain cases radium has its uses, and very remarkable temporary results are obtained. It is only, however, in cases of rodent ulcer, and by no means always even in them, that permanent freedom from recurrence has been observed. Of the lead treatment of Blair Bell we cannot speak with certainty. We must remember that his only chance of success is with the case in which everyone else has failed; with this category of the outcast he has certainly done better than any man.

CONCLUSION.

The points upon which we should at this moment concentrate our attention in our fight against cancer are, therefore, two:—

1. To make the very utmost of our present methods which are applicable to all cases of accessible growths.

2. To undertake research so that we may discover the cause or causes of cancer, and so be enabled to do something for the prevention of the disease or for its cure by methods other than those of surgery.

We do not make the most of our present methods, and we are not likely to make the most until the public is instructed in some of the matters essential for them to know if they are to seek help in that stage of the disease which is capable of cure. There are many medical men who regard with dismay or disapproval the suggestion that the public should be educated in matters concerning cancer. It is said we shall "frighten them to death." I prefer to think that we are frightening them to life. The problem of cancer is so simple and straightforward that any intelligent person may understand it; and by understanding it, learn to dread not cancer but neglect of cancer.

As for research it is, perhaps, hardly too much to say that the conquest of cancer is a question of money. Research, ceaseless research by trained skilful workers, research of the widest kind into all aspects and relationships of the disease, will surely capture the most elusive secret of its causation.

Dr. W. E. Gye, whose authority is indisputable, has said that "during the past 25 years—that is to say, during the period of experimental research into this disease—there has been greater progress in the study of cancer than in the study of any other single serious malady that attacks human beings." We hope that research may discover the cause or causes of cancer, and enable us, perhaps, even to prevent it or to rescue its victims by some other method than that of operation. The enemy grows yearly in strength, and though we are defeating him in some of his strongholds he is gaining on us elsewhere. The time has come for a great national uprising against him.

An Address ON ABORTION.

Delivered at a Joint Meeting of the Section of Obstetrics of the Royal Society of Medicine and the Medico-Legal Society on Jan. 21st

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I WILL endeavour first to give an idea of the medical indications for the induction of abortion and then to state the problems involved in it.

MEDICAL INDICATIONS.

The reproductive function is one that, like severe physical exertion, tests all the bodily functions, and under it some women will break down, even if previously perfectly sound. The chemical processes are liable to become disordered and poisonous bodies may be formed causing damage to the liver and kidneys, the organs especially concerned in the modification and excretion of waste products. The proportion of women who show signs of such failure is small, a fraction of 1 per cent. Should it (toxæmia of pregnancy) occur, however, and not yield to treatment, the risks to the mother are great; in the worst cases, happily rare, she may go into convulsions and coma (eclampsia) or suffer from dropsy or uncontrollable vomiting, but the commoner danger is that of chronic kidney disease (Bright's). These cases are easily picked out by analysis of the urine and other tests, and when they do not yield to treatment are universally accepted as justifying the termination of the pregnancy, the more so because in kidney disease death of the fœtus in the womb occurs in nearly half the cases.

The cases in which pregnancy occurs in a woman with some chronic disease that may be aggravated by the pregnancy form another group, in which, however, the results to be obtained from terminating the pregnancy are less certain and more open to difference of opinion. In some diseases, such as chronic kidney disease and diabetes, there will be general agreement that pregnancy should be ended, but in regard to tuberculosis, heart disease, grave malnutrition, nervous and mental states there is room for wide variation in practice. The effect of the pregnancy is speculative, but many accept without question the ill-effect that they think may arise and end the pregnancy forthwith. Others advocate induction of abortion only when there is definite evidence of the disease being aggravated. In heart disease, for instance, my own experience is that if the woman does not improve by rest in bed and medical treatment neither will she improve by ending the pregnancy, and sometimes the operation acts as the finishing touch. The case of a woman who has suffered from insanity in a previous pregnancy is an especially difficult problem. Should the next pregnancy be ended for fear of a return of the mental disorder that may or may not recur? The usual rule is that if the second pregnancy has followed soon after the one in which the trouble arose it should be terminated; also in any case in which insanity has occurred in more than one previous pregnancy. On the other hand, if there has been some complication not likely to recur, such as excessive bleeding or septic infection which was clearly the provoking cause of the mental disorder, it is usual to allow the pregnancy to continue and trust to general medical treatment. There is, however, in all serious disease of the mother something to be said for relieving her of the physical and mental strain of bearing and rearing a child, even if statistics show little gain from it.

Laymen will readily appreciate, however, the difficulty of the medical practitioner who is faced with the case of a woman suffering from a serious medical condition or who has had previous mental disorder and is pregnant. The husband and relatives look on the pregnancy as an aggravating factor in her condition and press for its removal. The doctor may know that its effect is of no moment, but he will never convince his patients, and the pressure on him becomes too strong to resist. Or again he may recognise that a tuberculous pregnant woman will do best in a sanatorium, but he cannot find accommodation for her or she may refuse to leave home, and he adopts the easy alternative of putting an end to her pregnancy.

The commonest reason, in hospital at any rate, for resort to this operation are the cases in which abortion has already begun, either spontaneously or from some accidental cause, or provoked by the taking of drugs, and the woman is ill from the hæmorrhage or infection of the damaged pregnancy or portions of it left in the womb. There are also less common cases in which the pregnancy is found to be diseased and incapable of further development and a possible source of danger to the mother, generally accompanied by bleeding or enormous excess of the waters. In these cases the only room for differences of opinion would be as to when the evidence was sufficient to indicate that the pregnancy was too damaged to continue or that it formed a definite risk to the mother. These points granted there would be general agreement as to the need for its termination. The cases in which labour is brought on prematurely when the mother is too small to allow of the passage of a full-time child fall into a different category, because the operation is done with the object of saving and not destroying the life of the fœtus.

THE PROBLEM STATED.

The original principle that guided the profession was that the procuring of abortion was lawful only if the woman's life was in danger if the pregnancy continued, but that principle was rightly extended to include also serious or permanent damage to her health. For example, it has always been recognised that the serious eye changes that may occur with the kidney lesions in pregnancy were in themselves a definite reason for bringing the pregnancy to an end. Rapid amelioration of the sight resulted. If the pregnancy continued permanent impairment and sometimes total loss of vision resulted. We have only to think what blindness of the mother means to her family to realise how clearly interference is justified.

Before, however, damage to her health can be predicted the woman must be kept under observation and treatment for such time as would suffice to show that progressive deterioration of her health left no alternative to the induction of abortion. The consequences to the patient can be estimated only by

taking into account what has happened in her previous pregnancies—if she has had any—how she is affected by the pregnancy in question, how far the effects have yielded to or resisted treatment, and by experience in, and knowledge of, similar conditions in other patients. The decision must be made largely on probabilities and there is room for much difference of opinion. Hence the need for consultation.

As will be seen from reports [1] of the discussion at the last annual meeting of the British Medical Association, the principle of danger to life and health of the mother has also been jettisoned, and many in the profession go so far as to act on the supposition that it is not unlawful to take into consideration other than purely medical factors and to allow social, economic, eugenic, and other reasons to weigh in justifying the induction of abortion. Such, for instance, as that the patient refuses to leave home or to try the effect of some special line of treatment; a girl's own story that she has been drugged or raped (especially if by a black man); that one or other parent is an epileptic or of feeble mentality, and so on.

The effect of the spread of these laxer views is cumulative and produces a vicious circle, for once the public learns that abortion can be procured "respectably" under the guise of medical indications, every woman fails to see why her medical attendant should hesitate in her case, which, she is convinced, must provide an adequate excuse.

CAUSES OF LOWER ETHICAL STANDARD.

There are many causes contributing to this lowering of the professional standard of responsibility towards the procuring of abortion. Resort to operative procedures is much more common owing to their greater safety and ever-increasing possibilities of speedy relief, and all operations are undertaken with much less consideration than was formerly the case. The attitude of the general public must affect the medical profession which is part of the public and serves it. The ethical standard of the public, never a high one, became lower during the war, though never falling as low in this country as in some mid-European countries that were especially affected by economic stress—e.g., Austria and Russia. The birth control propaganda that has followed the war probably arises from the same causes and likewise tends to produce a slackening of moral standards on the destruction of a pregnancy. The factor, however, to which I would ascribe the chief influence is that of changing social conditions and their effect on the women of the day. Our womenkind have secured wider interests and much greater opportunities than were open to their Victorian predecessors and crave for much more than a family life. For these gains they have paid in a greater tendency to nervous exhaustion. They may have wider fields open to them than their grandmothers had and be better equipped to till them, but their capacity to endure strain has not increased proportionately, and so far as the reproduction of the species is concerned they are inferior. They would die—or they would have us believe so—if they produced families half the size of their grandmothers, and they call for much more in the way of artificial aid in childbirth.

To illustrate this aspect of the problem as it confronts the medical profession to-day let me draw an imaginary picture. Imagine a wife of the highly-strung over-sensitive type with two or three children and full of anxieties regarding their education and upbringing. She has been trained to a professional or commercial life and still adds to the family budget by her earnings. Finding herself pregnant again she is in the depths of despair. She has made very heavy weather of her previous pregnancies and labours, her husband dreads again living through the months of the trials he has experienced before, and the two appeal to their family doctor to find some excuse by which her pregnancy and the consequent depression and nervous strain that fall on the whole family may be got rid of. An actual case of this kind was reported in the B.M.A. discussion which I would like to consider in some detail as a sample. It has a topical touch about it, too, for it concerns a learned counsel and his wife—the latter of "a sensitive artistic temperament." A third pregnancy had followed after rather a short interval and Mr. and Mrs. K.C. had decided that her health might be affected, and the following casuistic argument is found seriously set out in print. "Both she and her husband took the view that, the prospective baby being theirs, it was their own affair whether they allowed their work to be completed or not." If the baby had not been "prospective"—as would eventually have been the case had the processes of nature not been interfered with—would these two worthies have taken the view that it was still their own affair whether they allowed its natural development to continue or not? After consultation with a second obstetrician abortion was induced because "rapidly recurring pregnancies often affected the mother's health very unfavourably." The sequel, however, best shows up the illogical character of the whole proceeding. Within six months she was pregnant again and returned to her doctor for relief, but the pernicious effect of rapidly recurring pregnancies apparently no longer sufficed. However, though "flatly refused" by the original consultants, the legal couple proceeded to a medical colleague "whom they found more pliable." As a speaker in the B.M.A. discussion remarked, "A patient's own or her husband's reasons for getting rid of an ovum should never be accepted, as there will generally be some selfish or sinister reason undisclosed." In this case the obstetricians fell easy victims to the specious argument of the learned counsel and no attempt was made either to test by observation what basis there was for his fears for his wife's health or to attempt any other form of treatment than the one desired. I would like to put two questions about this case. Had the lady and her husband come to a hospital, would the same treatment have been adopted? Had she been unmarried and unwilling to go through her pregnancy because she was apprehensive of its causing irreparable damage to her social health and position, would the treatment have been the same?

A CRITERION PROPOSED.

It is the frequency of cases of this kind that has served to weaken the former reluctance of the profession to resort to the procuring of abortion save for grave danger to the mother. Such cases have enough in common with those fashionable explanations for aberrations of conduct—loss of memory, temporary irresponsibility, kleptomania, impulsive action, and others of the like, as announced in the press or pleaded in court, that they should arouse some fellow feeling for their medical brethren in the breasts of the legal profession. The most useful result that might come from this combined discussion would be the formulation of some guiding principles that might help the medical profession to steer a safe middle course between allowing their patients to suffer serious injury to their health and overstepping the Common Law of the Realm.

For my own part I would advocate that none other than purely medical considerations be allowed to weigh, and here I at once cross swords with my colleague who opened the B.M.A. discussion with the following hopelessly inverted statement of the position. I am sure this meeting will not be bluffed into studying the problem upside down as he tried to present it. He says: "It is an ethical question of great interest to what extent we, as doctors, have the right to insist that a woman shall pass through an ordeal which she is unwilling to face, even if we do not think that she will sustain any permanent injury from so doing." The "right to insist" forsooth—it is not the right to insist; it is, have we the right to interfere with a normal pregnancy?

[1] THE LANCET, 1926, ii., 378; Brit. Med. Jour., 1926, ii., 237.

Once other than purely medical factors are allowed to count no line can be drawn between criminal and therapeutic abortion. As a profession we are not trained in sifting evidence, nor can we question our patient's own story as to how she came by her pregnancy. In the next place, granting that anxiety and mental distress over an undesired pregnancy may cause disability and "nervous breakdown," can any line be laid down for these difficult and border-line cases? As one of those taking part in the B.M.A. discussion said in regard to the psychological problems: "Surely nothing could be worse than the mental torture of illegitimate or illicit pregnancy?" Are we, then, justified in terminating these? If mental distress over the occurrence of a pregnancy is admitted as an indication for abortion, how are limits to be set to the operation? And surely the single girl should have the preference over the married woman with children, although it is the former cases that most often lead to hesitation on the part of the medical attendant for the reason that they are more liable to lead to suspicion as to motive.

I would suggest to my obstetric colleagues that we think this matter out in terms of hospital rather than of private practice, for the cases of the kind now under consideration are relatively very rare in hospital. The reasons for the difference between private and hospital practice are not far to seek. The private practitioner is in much closer personal relationship with his patients, by whom he is retained as adviser, and they, in paying the piper, demand some say in calling the tune. He is thus much more influenced by his patients and his patients' relatives, and his judgment is diverted in the direction of their wishes, and he is on the whole more affected by the attitude of the general public than the consultant in hospital practice.

In hospital other than purely medical factors do not weigh and the patient is kept under observation and treatment, and only if her condition is too serious to brook delay, or if other measures of relief have clearly failed, is abortion resorted to. Medical treatment has also greatly advanced in the last 25 years. Hence the guiding principle I would urge for these nervous or psychopathic or other border-line cases is the hospital method of observation till the symptoms are proved to be genuine and unrelieved by treatment, and only as the last resource should the pregnancy be destroyed. The case already quoted affords a good example of failure to adapt hospital methods to private practice.

There is another point calling for the opinion of our legal brethren that is well set out in Döderlein's "Handbuch" (vol iii., p. 18) in which three paragraphs from the German Penal Code are quoted setting out the number of years' imprisonment for the various persons who may be concerned in the destruction of a pregnancy and without exception whatsoever for persons or reasons. A later paragraph from the Code is then quoted in which even longer years of "strafing" in prison are laid down for one convicted of causing the death of a fellow creature from negligence, and the writer goes on to ask what is the doctor to do? He may be called on to answer in the courts a charge of abortion procured on purely medical grounds or a charge of causing the death of a mother by his neglect to terminate the pregnancy which led to her decease. I would like to know how this dilemma, as made in Germany, might hold good in this country.

ETHICS OF ABORTION.

It is obvious why all civilised nations protect themselves against abortion-mongering, for it is but infanticide anticipated by a few months. The destruction of a pregnancy—at whatever stage it is done—is the destruction of life and the killing of a potential citizen, though it is too much to expect the populace to think that the non-sentient embryo is of much account. Wherever and whenever there is little regard for human life the destruction of a pregnancy will be of no moment. The detection and legal proof of abortion-mongering is always a difficult matter and the vast majority of cases go undiscovered. The degree to which the practice exists in any community will vary chiefly with the civilisation and moral standard of its people as a whole and on their respect for the laws under which they live, so that in some nations the laws against abortion-mongering may be so far disregarded as to be in practice non-existent. So far as I know the Soviet Republic of Russia is the only State in which abortion is actually legalised.[2] If the lax views of many of the profession become general the Bolshevist system of unrestricted abortion-mongering will become a vested interest of those on the Medical Register, who will become merely the instruments of those patients who hire them for the purpose.

To avoid this degradation the following guiding rules are brought forward as a basis for discussion.
1. Medical indications alone should be considered.
2. Medical indications should be defined as those clearly involving danger to the life of health of the mother or damage to the pregnancy sufficient to interfere with its future development, and the onus of proof should rest on the practitioners concerned.
3. In doubtful or border-line cases observation of the patient away from home and failure of other methods of treatment should have proved that abortion is the only resource.

ETHICAL, LEGAL, AND MEDICAL ASPECTS OF ABORTION.*

BY LORD RIDDELL.

As an observer I have noticed the simultaneous development of two conflicting lines of thought and practice amongst obstetricians. On the one hand an increased regard for the safety of the child as compared with that of the mother, and on the other an increased tendency in some quarters to procure abortions. Obstetrics being the most important and widespread branch of medicine, affecting as it does every member of the community, the opinions and practices of high priests who set the standards and control the education of students and midwives are subjects of national importance. In my capacity of an observer, perhaps I may be permitted to state what I regard as the causes of these two trends of obstetric opinion and practice.

TWO TRENDS OF OPINION.

The increased concern for the safety of the child, as compared with that of the mother, seems to be due to three reasons. First, the improvement in the art of midwifery, which has led the practitioner in abnormal cases to adopt various gadgets (I use the word in no invidious sense) with the object of producing a live child. The development of most arts is characterised by increased finesse. Midwifery is no exception. Second, the natural revolt of doctors, practising in a humanitarian age, against the destruction of fœtal life, particularly by barbarous methods such as craniotomy; and third, the direct and indirect propaganda of the Roman Catholic Church which teaches that abortion is not permissible and that the fœtus must not intentionally be destroyed to save the mother's life or to protect her health.

The increased tendency to procure abortions seems to be due, first, to a growing desire on the part of medical men to please their patients—the pontifical doctor is becoming a thing of the past; second, to the decrease of religious inhibitions; and third, to the safety and simplicity of modern methods.

[2] Those interested in the conditions in Russia may be referred to the Medical Review of Soviet Russia (Brit. Med. Jour., 1926, ii., 802), by Dr. H. Gantt, American Relief Administration.

* This paper followed Dr. Fairbairn's at the meeting on Jan. 21st.

These two sets of ideas act and react on each other and produce what may be termed "the modern midwifery atmosphere." When the first set is uppermost it may lead to undue suffering and risk for the mother. When the second prevails it may cause the practitioner to destroy fœtal life unnecessarily and also to commit illegal acts.

Before discussing definite problems that have to be faced in practice, it is necessary to consider the legal position, often misunderstood.

THE LAW OF ABORTION.

The law regarding abortion is comprised in the "Offences against the Person Act, 1861," which provides that whosoever with intent to procure the miscarriage of any woman shall unlawfully administer to her any poison or other noxious thing or shall unlawfully use any instrument or other means whatsoever with the like intent shall be guilty of felony. "Miscarriage" is a comprehensive term which includes both abortion and premature birth in the sense in which these words are understood by the medical profession, abortion being the expulsion of the fœtus during the first 28 weeks and premature birth expulsion after that period. Miscarriage also comprises the destruction of the child during labour. The term "unlawfully" is not defined, but obviously denotes a wrongful act, done intentionally without just cause or excuse. An adequate medical or surgical reason is the only just cause or excuse recognised by law for procuring a miscarriage. The legal rule may be stated thus:—

> It is contrary to law to procure, or attempt to procure, a miscarriage except with the object of saving the mother's life or avoiding serious injury to her health. The essence of the offence is a guilty intent. An honest effort to save the life or health of the mother is not illegal, although the practitioner may commit an error of judgment in performing an operation subsequently regarded by other practitioners as unnecessary. He will not be liable to conviction if he honestly believes that what he does is required to save the mother's life or health. If the mother dies in consequence of an illegal abortion, the person performing it may be liable for murder or manslaughter, but these offences cannot be committed in respect of a child in its mother's womb, as the child is not in *rerum natura*. If, however, the child is born alive and subsequently dies, owing to injuries received *en ventre sa mere*, the offender may be convicted of murder or manslaughter. (See cases quoted in "Russell on Crimes." Eighth edition.)

Taylor's "Medical Jurisprudence" (seventh edition) states that in law "there is no such thing as justifiable abortion," and that "the only reasons that can be thought of by an honourable man as justifying the induction of labour are: (1) to save the life of the mother, (2) to save the life of the child." This statement is open to serious criticism. Obviously the authors have overlooked or misinterpreted the word "unlawfully" in the Act of 1861. Furthermore, there is no doubt that a miscarriage may be lawfully procured not only to save the mother's life, but to avoid serious injury to her health. The law is more accurately set forth in "Russell on Crimes," which describes as lawful "acts done in the course of proper treatment and in the interest of the life or health of the mother." As to Taylor's reference to the life of the child, the statute deals only with measures to destroy the fœtus, and has no application to bona fide attempts to produce a live child or to preserve its health. Furthermore, the Act does not relate to the removal of a dead fœtus.

THE WELFARE OF THE PATIENT.

So far as I am aware, there are no legal decisions as to the pathological conditions justifying abortion. This is not surprising. I know of no case in which a medical man has been prosecuted for an error of judgment in procuring a miscarriage. "Midwifery by Ten Teachers"—one of the latest text-books—says that "operations of this kind are confined to cases in which the life of the mother will be endangered or her health permanently damaged by the continuation of the pregnancy." But with all due respect I think the word "permanently" inaccurate. Induction is not only justifiable, but a duty, when the prognosis indicates grave danger to the mother's health, whether the results are likely to be permanent or not. The danger must, however, be serious. Induction is not justified for the purpose of avoiding minor risks of pregnancy, such as the use of forceps or perineal tears. A woman who becomes pregnant must be prepared to undergo the ordinary discomforts of pregnancy and to take the ordinary risks. Therefore the practitioner must not be influenced by the adjurations of the patient or her relations to relieve her of these. Nor must he be influenced by economic considerations or by his sympathy for a woman who finds herself in a distressing situation, involving perhaps social ruin. In short the medical man must confine himself to the medical and surgical aspects of the case. The statement in "Midwifery" that "it is the practitioner's duty to do all in his power to counteract the modern tendency to curtail families for the sake of the State as well as for the sake of the woman's bodily and mental health" is also open to question. I respectfully suggest that the doctor's sole duty is to consider the welfare of his patient. In deciding on the necessity for abortion he should not be influenced by a predilection "in the interests of the State" either for large or small families.

CONDITIONS WHICH JUSTIFY ABORTION.

The standard text-books on obstetrics indicate certain conditions that may admittedly justify abortion. Some are caused by diseases peculiar to pregnancy and others by diseases apart from pregnancy but aggravated by it. Even a layman can understand that each case must be judged on its merits. The practitioner must exercise his discretion, remembering that in the absence of just cause the procuring of a miscarriage is a criminal offence. But he must remember also that the mother's life must never be sacrificed to her unborn child, even if she is suffering from an incurable disease, such as T.B. in an advanced stage. On the other hand, the possibility of diseased offspring is no indication for abortion. The practitioner is not entitled to engage in eugenic excursions of this sort, and it must be remembered that unhealthy parents occasionally have healthy children. It should also be remembered that a woman is under no obligation to submit to Cæsarean section as an alternative to abortion. Happily the necessity for these measures is steadily diminishing owing to improved methods in the treatment of disease and to improved obstetrics which lessen the strain on the mother during pregnancy and labour. It is apparent that even the conditions described by the text-book writers must provide ample scope in many cases for the compliant practitioner and ample room for honest doubt on the part of the scrupulous one. There are, however, cases of other classes that present even more difficult problems. These are said to be increasing in number owing to the growing disinclination on the part of many women to submit to the normal discomforts of an unwelcome pregnancy.

It may, however, be pointed out that this is no new phenomenon. Juvenal (circa 60–140) has some well-known and emphatic lines on the subject. "These, however (the poorer-class women), do undergo the risk of childbirth and bear all the fatigues of a nurse; but rarely does a woman in labour lie on a gilded bed, so powerful are the arts and drugs employed by such a one."

And in 1868, an American, Dr. Storer, wrote a book "Criminal Abortion" in which he deplored "its awful extent" amongst American women who did not wish to be inconvenienced by repeated pregnancies. We are too prone to pay undue attention to the abnormal. The truth is that the mass of women are taking a more intelligent interest in the production of healthy children than at any previous period. At a large child-welfare clinic with which I am connected, the mothers—all wives of working

men—write yearly essays on the management of pregnancy that would do credit to doctors or midwives. But let us take a few typical cases of a kind calculated to cause the conscientious practitioner serious anxiety and to afford the compliant ample scope.

1. Case of Mrs. Smith, aged 26. Fashionable wife of a well-to-do man. Married two years, two children. Four months after birth of second child again becomes pregnant. Much distressed. Nervous, irritable, and out of control. Says she vomits all she takes, and is sinking from constant sickness. Darkly hints at suicide. Begs medical adviser to terminate pregnancy.

2. Case of Mrs. Brown, aged 40. Wife of working man earning forty shillings per week. Married 16 years. Lives in two rooms. Eight children. Again pregnant. A delicate highly strung woman, much run down by repeated pregnancies and hard work. Loses appetite. Loses weight. Sleeps badly. Suffers from severe vomiting. Is in a most depressed condition. Prognosis doubtful. Implores doctor to terminate pregnancy.

3. Case of Miss Jones, aged 20. A cultured girl who has got into trouble. Attempts suicide and presents unmistakable symptoms of mental collapse.

4. Case of Miss Robinson, aged 30. A cultured woman who becomes pregnant owing to assault by a tramp. Mental condition serious. Threatens suicide unless pregnancy terminated.

THE PRACTITIONER'S POSITION.

What should the practitioner do under such circumstances? We know, of course, that he should invariably get the benefit of a second opinion, and we know that in modern practice it is usual to secure such an opinion from a specialist in the disease affecting the pregnancy. It is for the specialist to say whether the woman can safely be allowed to go to full time. Consequently in the four typical cases quoted, it would seem to be the duty of the doctor to call in a general physician or a mental specialist as may be most appropriate. If he advises in writing that the continuation of the pregnancy is likely to kill the woman, ruin her health, or drive her into a mental home, then in my opinion, *quantum valeat*, as the lawyers say, the procuring of a miscarriage is not only justifiable but a duty. Cases in which the patient misrepresents or exaggerates her condition with the object of persuading the doctor to terminate the pregnancy are not uncommon. Therefore extreme care is necessary when making the diagnosis.

It would be futile to disregard the fact that some practitioners are ready to seize on any medical or surgical reason to justify an abortion when desired by the patient to avoid an unwanted child. It is useless to discuss such conduct. The offence cannot readily be detected in the case of a married woman attended by two medical men. Nevertheless it is a risky game. When required to deal with a pregnant unmarried woman, the practitioner is faced with problems of exceptional difficulty and danger. If he procures an abortion his motives are open to question, and if he fails to do what is necessary to preserve the life or health of his patient he is liable to grave moral condemnation and may possibly incur serious legal consequences. When faced with such a problem, the practitioner should always remember that secrecy is the badge of fraud. If he acts openly, and if he is supported by another sound opinion, he has little to fear if his motives are right. It is not a crime for an unmarried woman to become pregnant, and her medical adviser has no right to condemn her to death or to serious morbidity because she happens to be unmarried.

THE ETHICAL ASPECT.

As to the ethical side of medical abortion, every one must obey the law, but the practitioner is under no compulsion to do what the law permits. He may say to the patient, "I am of opinion that an abortion is necessary and therefore legally justifiable, but my conscience will not allow me to procure it. If you insist, you must go elsewhere." But in giving effect to ethical convictions the practitioner must not offer up a vicarious sacrifice. To speak more plainly, the patient must not be prejudiced by her medical adviser's conscientious scruples. Both law and ethics demand that her condition should be explained and that she should know that she is being attended by a doctor who has convictions which she may or may not share.

In considering the ethical aspect of the question a brief history of the subject is necessary.

GREEKS AND ROMANS.

Although prior to the Christian era the practice of abortion was common among the Greeks and Romans, little is known as to their legal attitude in regard to it especially in the case of the Greeks. The Oath of Hippocrates (460–370 B.C.) forbids it, but the prohibition obviously relates to what we should call criminal abortion and not to abortion for medical purposes. Also it is doubtful whether the Oath as we know it was prepared by Hippocrates. Additions may have been made by his disciples at a later date. It is curious that the Oath is the only evidence that abortion was regarded with disfavour by the Greeks. Certain Greek philosophers, notably Plato (427–347 B.C.) and Aristotle (384–322 B.C.) expressed themselves decidedly in favour of the practice. Plato (Republic V., 461 C) was ready to allow those who had passed the limits of age prescribed for procreative purposes (20–40 years for the woman, 25–55 for the man) to practise promiscuous intercourse but only on condition that such couples should have no children. "We accompany this permission with strict orders to prevent any embryo which may come into being from seeing the light" (Trans. Jowett). Aristotle's opinion (Politics VII., 16) may be compared to that of modern advocates of birth control. "When couples have children in excess and there is an aversion to exposure of offspring" (to destroy them), "let abortion be procured before life and sense have begun" (Trans. Jowett). Indeed, as Lecky says in his "European Morals," "the practice of abortion was one to which few persons in antiquity attached any deep feeling of condemnation." When specific acts of abortion were condemned, this was not on moral grounds, but because the rights of husbands had been infringed, or the devolution of property interfered with. Cicero (106–43 B.C.) relates a case in which expectant heirs bribed a pregnant woman to procure an abortion and thus defeat the prior rights of her coming child. She was sentenced to death. (Pro. Cluentio XI.) Havelock Ellis says ("Studies in the Psychology of Sex") that in accordance with the patriarchal basis of early Roman institutions it was the father and not the mother who had the right to decide on abortion, but I have not been able to verify this.

The comparative indifference with which abortion was regarded by the Greeks and Romans is explained by the view generally held that the fœtus was not a human being or animal but *pars viscerum matris*. There is no trace of any Roman penal law against the practice until the time of Ulpian in the early part of the third century, when abortion was made a crime, but the Stoic Musonius, writing in the first century, remarked that "the legislators have forbidden women to procure abortion and inflict penalties upon offenders." Galen, writing in the second century, says much the same. The Justinian Codex promulgated in the sixth century confirmed the laws of the Ulpian period but discriminated between abortion before and after 40 days in the case of a male and 80 in that of a female, thus following the Aristotelian idea, of which more hereafter. How the practitioners divined the sex when considering whether to operate is not revealed. Hippocrates had committed himself to the statement that boys quicken a month earlier than girls ("On the Nature of the Child"). The Roman Codex did not recognise the unborn child as a human being, and consequently abortion was not equivalent to homicide. These laws may have been due to the enormous growth of the practice under the Empire, as morals became increasingly corrupt, or to the spread of the Christian religion. The Church early in its history set its

face against abortion. This was due partly to a revolt against the doctrines of the Aristotelian school who taught that there was: (1) a vegetable soul which came into being at conception; (2) an animal soul which developed a few days later; and (3) a rational soul that came into being after 40 days in the case of a male and 80 of a female. The rational soul presented no difficulty. To the Church the rational and spiritual were a unity. Accordingly once rationality had attached to the corporeal child in the womb its destruction was logically murder. The vegetable and animal stages, the *homo rationalis futurus* (the rational man to be) presented subtle intellectual problems.

THE MOSAIC LAW.

Abortion was not expressly prohibited by the Mosaic laws except that Exodus XXI., v. 22, inflicts penalties for injuring a pregnant woman in a brawl. The New Testament is silent. Therefore the question was whether abortion was contrary to the Sixth Commandment "Thou shalt not kill." The Christian Fathers faced the situation with characteristic resolution and more than characteristic precision. Tertullian (155–222) voiced their views when he said, "Murder being once for all forbidden, we may not destroy even the fœtus in the womb. To hinder a birth is merely a speedier homicide; nor does it matter whether you take away a life that is born or destroy one that is coming to birth." Gregory of Nyssa (fourth century) declared that "one identical life principle exists from conception to death." Similar pronouncements have been made from time to time by various ecclesiastical authorities. These declarations involved strange results and made abortion a deadly sin. The fœtus, being a human creature and therefore the inheritor of original sin, was certain of eternal damnation if it perished without baptism. For this reason the Church still teaches that the life of the child must not be sacrified for the mother's benefit. Either she has been baptised or she has neglected her duty, whereas abortion would deprive the infant of baptismal rights. In the Middle Ages little was heard of abortion, no doubt due to the universal authority of the Church. In England in Anglo-Saxon times it seems to have been regarded as an ecclesiastical offence only (Stephen's "History of Criminal Law," Vol. I., p. 54). Later it became a crime, see legal works of Fleta (circa 1290), Bracton (d. 1268), and Coke (1552–1634). It should be noted that until the Act of 1861 already quoted, our law drew a distinction between a woman quick with child and one not quick. (Quickening is supposed to occur about the eighteenth week.) This difference was embodied in the first statutes prohibiting abortion, 43 Geo. III., ch. 58 and 9 Geo. IV., ch. 31. If the offence was committed before the woman was quick, the penalty was imprisonment, transportation, or whipping. If later, death. From all this it appears that abortion, although tolerated before the Christian era, has long been regarded as an anti-social act, contrary to the welfare of the individual and the State. This view is not based upon ecclesiastical doctrines as to viability that may or may not be justified by the facts or by the Scriptures. When considering the ethics of medical abortion, it is important to note the distinction between an ethical rule made by mankind for their own protection and a natural law such as the Sixth Commandment.

THE BIOLOGICAL VIEW.

The discussion is, however, complicated by the views of those who hold, for so-called biological reasons, that the life of the embryo is sacred even in its earliest stages. The exponents of these opinions disclaim the influence of ecclesiastical dogma, but in effect agree with the Roman Catholic Church that one identical life principle exists from conception to death. This doctrine involves subtle questions, which may be argued indefinitely both as to time and conclusions. When does life begin? When does the child establish a separate entity apart from its mother? The Greeks and Romans revelled in such speculations. Plutarch's "Morals" contains a quaint epitome of the opinions of several eminent persons on this abstruse subject, enlivened by the analogy of the unplucked apple. Is it part of the tree or a separate entity? Xenophon and the Stoics regarded the fœtus as the fruit of the womb, the soul mind or intelligent principle being acquired at birth. Aristotle's views have been described already. It must be confessed that modern discoveries have not helped us to solve these metaphysical problems. Logically the life of the microscopic embryo with its potentialities may be as sacred as that of the fully grown man, but human affairs are not governed by logic. Therefore we find that for nearly 3000 years the laity have not regarded the fœtus as a human being. This may not be logic but it is common sense. Abortion is anti-social and illegal unless performed for an adequate medical reason. But when such reason exists there is no ethical objection. The doctrine that the mother is to be sacrificed or risked for the benefit of the unborn child is a resuscitated relic of the Dark Ages and biologically unsound. On strictly ethical grounds, saving the mother's life or health is more laudable than the observance of theoretical ideas regarding the viability and rights of the fœtus. As Dr. Ballantyne says when summarising ideas, of which he disapproved, by the way ("Ante-Natal Pathology," p. 459), "The mother's life has a value because she is what she is, while the fœtus only has a possible value on account of what it may become." Perhaps I may be permitted to add that consciousness may well be the test. What evidence is there that the fœtus possesses this quality? The whole tendency of modern life is to abandon forms however venerable, and to concentrate on realities. The ethical propriety of lawful abortion must be considered from that aspect. As Aristotle says somewhere, scientific exactitude is impossible in reasoning upon particular ethical cases. The circumstances of each case must be regarded. Health is the purpose of medicine. Therefore the doctor is justified, providing that he acts within the law, in doing what will be most conducive to the object of his calling.

ESSENTIALLY A WOMAN'S QUESTION.

Hitherto abortion has been a question entirely in the hands of men—Christian ecclesiastics, lawyers, doctors, and politicians. Yet it is mainly a woman's question. In Germany it has been actively taken up by women. (See Havelock Ellis's "Studies in the Psychology of Sex.") German writers insist that the fœtus is not yet an independent human being and that every woman, by virtue of the right over her own body, is entitled to decide whether it shall become one. I hope we shall all regard this as an anti-social proposition. Nevertheless, it is certain that the practice of contraception would receive an enormous stimulus if the public thought that the lives and health of pregnant women were to be risked against their will and without their knowledge by reason of ethical objections to perform a legal operation.

There are two further points that demand attention. The destruction of a full-grown child is a revolting affair, whereas the abortion of an early fœtus differs but little from the removal of a uterine tumour. Even the Roman Catholic Church, in awarding its punishments, discriminates between early and late abortions. See, for instance, Decretal of Pope Gregory IX. (1244) defining abortion as homicide if the child had quickened, otherwise not. Consequently it is the duty of the practitioner to perform the operation early if reasonably satisfied that it will be required sooner or later.

CONCLUSION.

Finally, how often should he procure abortion on the same woman? And how often should he perform a Cæsarean section? No doubt each case must be

judged on its merits. But this at least may be said. Procuring abortion involves serious and exceptional responsibilities which a patient is not entitled to thrust on her medical adviser. Therefore she should be warned against future pregnancies and, in appropriate cases, sterilisation should be recommended. Cæsarean section differs, of course, from abortion inasmuch as there is no express statutory prohibition, but if a Cæsarean section were performed unnecessarily and the patient died as a result the practitioner would be liable to conviction for manslaughter.

Nature has ordained that children shall be produced in a certain fashion and abnormal methods are not justifiable to gratify whim or caprice. Nor, it is submitted, should the practitioner lend himself to a series of such operations. If a woman cannot bear children in the usual way, she should be warned against further pregnancies that must result in abortion or in an operation attended by serious risk.

NEW METHODS AND PRINCIPLES IN THE TREATMENT OF VARICOSE VEINS.

BY A. L. VISCHER, M.D. BÂLE, M.R.C.S. ENG.

THE satisfactory results obtained by the injection of substances causing sclerosis in the treatment of varicose veins, which have been reported from many places, have rightly aroused interest.

In the present paper an endeavour will be made, in the light of personal experience, to set forth some of the remedies which have been recommended, with their effects, and to add a few brief remarks about some new results of scientific research work, especially regarding the state of the circulation in the lower limbs, which are important for an appreciation of the new methods.

All methods whose object is to destroy the varicose veins by injecting substances causing sclerosis date back to the Berne surgeon E. Tavel, who, in 1904, recommended the injection of a 5 per cent. solution of carbolic acid into the varicose veins. This method, however, was not adopted. During the war German, French, and Austrian workers took up this treatment, using different substances. In most countries the treatment met with almost general disapproval because of the fear of embolism. The various scientists, however, went on with their experiments, which had already given good results, and they now look back upon excellent results extending over several years. On the basis of this experience the method can now be recommended without hesitation to the medical world.

Various remedies are employed in this treatment. J. A. Sicard and L. Gaugier, Paris, use sodium salicylate in a 20 per cent., a 30 per cent., and a 40 per cent. solution; Linser in Germany uses a 20 per cent. solution of sodium chloride, and lately G. Nobl in Vienna has recommended grape-sugar in a 50 per cent. solution, having previously used a 1 per cent. solution of sublimate in numerous cases.

Apart from the authors mentioned, many others have published their results; the above-named scientists deserve, however, most consideration, as their experience extends over thousands of cases.

Principles underlying the Treatment.

The action and principle are the same whichever substance is used. When one of these remedies is injected into a varicose vein damage to the wall of the vein takes place. A thrombus is formed on the damaged wall of the vein, which is quickly organised. An artificial thrombophlebitis is the result. The artificially formed thrombi are remarkable for their great tenacity, for they do not become dislodged, and no fragments are detached from them. The artificial abrasion of the intima and the resulting formation of thrombi can only take place in varicose veins. The wall of a normal vein shows, indeed, a great power of resistance against any damage by corrosive substances. Salvarsan and sodium salicylate solutions of high concentration have been injected into the arm veins without the formation of any thrombi being observed. The inner wall of the varicose veins, as has been proved by numerous pathological-histological investigations, is almost always affected. The wall is sometimes moderately hypertrophied, but generally it is atrophied, and in extreme cases the three coats have degenerated into a thin fibrous membrane.

The extent of the artificial damage to the wall of the veins after an injection measures from 3–10 cm. and depends on the strength of the injected substance and on the degree of dilution with blood in the injected vein. In rare cases the varicose veins of the whole leg are acted upon.

Unwarranted Fear of Embolism.

The suspicion attaching to this method and the unwillingness of many doctors to take it up originate in the fear of embolism. The formation of a thrombus suggests at once the possibility of embolism. All the above-named clinicians report, however, that they have never observed embolism occurring after the injection of substances causing sclerosis. P. D. Linser cites more than 6000 cases in support of this assertion, Sicard and Gaugier "several" thousand cases, and G. Nobl 2960 cases, extending over eight years.

The absence of any danger of the formation of emboli is not only empirically proved, but can also be established by certain anatomical, histological, and physiological findings. The damage to the inner wall of the vein is severe, and in consequence the adhesion of the thrombus formed is very close and firm. The thrombus adheres, not only in one place, but in parts, to a large proportion of the wall. The artificially formed thrombus has a tendency quickly to organise; in the wall of the vein a productive inflammation takes place, and strands of young vessels and connective tissue penetrate into the thrombus. Later a transformation of the connective tissues occurs, the varicose veins which have been subjected to treatment close up, and ultimately become thick fibrous cords. The adhesion of the artificial thrombus to its place of origin is further explained by the course and structure of the very sinuous, dilated, alternately expanded and constricted blood channel.

The Circulation in Varicose Veins.

To understand this new method a knowledge of the conditions of the circulation in the varicose veins is extremely important. Trendelenburg's well-known experiment has taught us long ago that in varicose veins the valves no longer close the lumen. The insufficiency of the valves is not the only sign of defects in the circulation. A. Jentzer's radiographic investigations with injections of a solution of bromide of strontium show that in varicose veins the blood does not flow towards the heart but towards the periphery. G. Magnus has studied the conditions of the circulation in varicose veins by introducing a hæmodrometer. These experiments have proved that in the recumbent position of the patient the blood in the varicose saphenous vein flows towards the heart or, in many cases, is practically stationary. When in upright position, or even only on bending the leg 45 degrees, the blood flows backwards towards the periphery, and the rapidity of the centrifugal stream is distinctly greater than that of the normal centripetal stream in the veins.

This fact explains why, in people suffering from varicose veins, often complicated by thrombotic processes, pulmonary emboli are never observed when the patients move about or when they are doing heavy manual work, but are formed only when the body i

in the horizontal position—e.g., during intercurrent illnesses. In fact, when a thrombus in a varicose vein becomes dislodged, it moves as a rule centrifugally into the fine branches of the saphenous vein and causes embolism of these vessels. Magnus believes that the ulcers which suddenly appear and rapidly grow may arise in this way.

It is an advantage in this method for the patient not to lie in bed after the injection, but to resume his ordinary employment.

Technique.

When making the injection care must be taken that the varicose veins are as free as possible from blood. To give any results the solutions must act on the intima in high concentration, that is to say, practically undiluted. It is therefore convenient to stretch the veins or to raise the lower limb during the injection.

An objection to the treatment by injection must be mentioned; the solutions cause necrosis of all the tissues if they are not injected into the lumen of the vein. The injections must be definitely intravenous, never perivenous or paravenous. This demands a very exact and precise technique.

Here is a brief account of the strength and doses of the solutions. If a *1–2 per cent. solution of perchloride of mercury* is used, an injection of from 1–3 c.cm. gives the desired result of irritation of the inner wall. If *20 per cent., 30 per cent. and 40 per cent. solutions of salicylate of soda* are used, at one sitting 6 c.cm of the 20 per cent. solution, 4 c.cm. of the 30 per cent. solution, or 2 c.cm. of the 40 per cent. solution can be injected. The *sodium chloride* is used in a 20 per cent. solution and 5 c.cm. of this solution are injected. In the case of *glucose*, Nobl recommends the injection of a 66 per cent. solution; 5 c.cm. of this solution are sufficient to produce a satisfactory local effect. The absolutely innocuous nature of the glucose makes it possible to treat several portions of the vein at one sitting.

The use of fine needles with short bevelled points gives the best results, and it is advisable to use a new needle for each injection. Before the injection the skin over the varicose vein is disinfected with tincture of iodine or alcohol. It is of the greatest importance that the injection be strictly intravenous. By drawing up blood into the syringe one has a test which can always be applied before or during the injection. After the injection light pressure with a pad of cotton-wool is applied for two minutes to the skin where it has been pierced by the needle.

General Remarks.

Though this new treatment of varicose veins has given excellent results and is without danger—provided, of course, that it is carried out correctly—it must nevertheless be pointed out that a relapse is by no means always out of the question. Either the artificially thrombosed veins again become permeable, or other veins degenerate into varicose ones. This is, however, much more frequently observed after surgical treatment of varicose veins. One need not hesitate to cure these recurrences by the injection method. In such cases the patients will object less to a repetition of the injection than to a second surgical operation. After a successful treatment by injection it is also important to improve the circulation in the lower limbs by systematic muscular exercise, and to avoid what is harmful, above all long-continued standing.

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INJECTION TREATMENT OF LOCALISED TUBERCULOUS LESIONS.

WITH SPECIAL REFERENCE TO CALOT'S PREPARATIONS.

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THERE is nothing new in the treatment of tuberculous lesions by injections; it has been strenuously advocated for many years by leading authorities on tuberculosis. But in view of the many patients admitted to hospital who have already been operated on and who have profuse discharging sinuses, even amyloid disease, one feels justified in again calling attention to a line of treatment which to a large extent saves the patient from the dangers of these serious complications. In the vast majority of tuberculous lesions operation is a mistake, the extent of which is not always realised by the surgeon, for he does not always see the end-result of his well-intended incision, or excision, as the case may be. There is no short road to cure in tuberculosis of bones and joints.

The most common complications of tuberculous disease of bones and joints are abscess and sinus formation. In notes collected of 110 cold abscesses the relative frequency recorded was: psoas, 28; gluteal (6 from spine, 6 from hip), 12; knee, 11; lumbar (7 from spine, 2 from sacro-iliac joint), 9; hip, 10; forearm, 6; dorsum of hand, 5; leg, 5; ribs, 5; thigh, 4; sternum, 4; elbow, 3; ankle, 2; retropharyngeal, 2; upper arm, 2; scalp, 1; foot, 1.

Technique of Aspiration for Abscess.

Aspiration of a palpable psoas abscess, pointing either above or below Poupart's ligament, is a perfectly safe procedure provided that the puncture with sharp trocar in cannula is made, not through the skin directly over the abscess but in an oblique direction, so that the cannula will pass through a fair thickness of healthy tissue before entering the actual abscess cavity. It is well before the puncture is made to slide the skin adjacent to that overlying the abscess, so that when the instrument is withdrawn and the parts return to the normal position the track is obliterated. Both lumbar and gluteal abscesses should be aspirated laterally and not medially, so that when the patient is in dorsal decubitus, gravity will not assist the fluid contents to find their way along the needle track and create a sinus. A psoas abscess is aspirated above Poupart's ligament at a point half inch above and to the outer side of anterior superior iliac spine. Aspiration should not be attempted unless there is definite evidence of fluctuation on deep palpation. It is advisable, especially when aspirating on the left side, that the colon should be emptied beforehand by enema. An abscess below Poupart's ligament pointing to the inner side of the thigh requires a little more care; the puncture should be made to the outer side of the femoral vessels, and the cannula passed behind them into the abscess cavity to the inner side of the thigh. An anæsthetic is safer in a case of this kind, and should also always be given before attempting the aspiration of a retropharyngeal abscess. In this case the needle is entered at the level of the second cervical vertebra at the posterior border of the sternomastoid. It is passed straight in behind the carotid sheath till it strikes the transverse process of the second vertebra, and then passed forward over the anterior surface of the transverse process.

Results of Trypsin Injection.

The results of trypsin injection, which was tried in a small number of cases, were not satisfactory. Two patients with psoas and two with hip abscess were

treated by aspiration and injection of 1 c.cm. trypsin. In each instance the focal reaction proved too great to be controlled. In one case of psoas abscess the abscess recurred so acutely after the third injection that it had to be incised; in the other three patients the abscesses broke through the skin. Five cases with sinuses were also treated by injection of trypsin into the tissues surrounding the sinuses. In one case only did improvement occur; this, a knee lesion with several discharging sinuses, was given 6 injections of 1 c.cm. trypsin, and healing occurred four months later. In the other four cases the sinus was connected with elbow, inguinal glands, hip and tibia, respectively; in no instance was any improvement recorded; indeed, in all it could be said that progress was definitely retarded.

Treatment of Cold Abscess.

The routine treatment for cold abscess subsequently adopted was aspiration accompanied by injection of Calot's modifying fluid.

This consists of olive oil 70, ether 30, creosote 5, guaiacol 1, iodoform 10 parts. The best olive oil is shaken up with absolute alcohol, 1 part of alcohol to 100 of olive oil, to remove certain impurities from the oil. This mixture is then left in a filter funnel for about 12 hours; the alcohol floats to the surface, carrying the impurities with it, and the pure oil can be run off below. The oil is then sterilised by boiling for 15 minutes. The creosote, guaiacol, and iodoform are triturated in a sterilised mortar with a sterile pestle, and added to the oil when it has cooled below 60° C. The ether is added when the mixture is cold. The result is a clear light-brown fluid which should be kept in the dark in a sterile Erlenmeyer flask of about 250 c.cm. capacity capped with rubber. It is not advisable to give more than 10 c.cm. as a dose once weekly; this can be repeated indefinitely as long as the abscess requires aspirating. Smaller doses are given to children according to age.

This modifying fluid was used frequently in Robroyston, both following the aspiration of cold abscesses and in the treatment of white swellings of joints. It was found to be of distinct use in both conditions and there is reason to believe from the results obtained that cold abscesses dry up more quickly when this modifying fluid is injected after each aspiration than when the aspiration only is done. Ninety-seven cold abscesses (including 20 psoas, 11 lumbar and gluteal, 12 hip and 9 knee abscesses) were treated by aspiration and injection. Of these, 66 healed; 26 (including 1 psoas, 5 lumbar and gluteal, 1 hip and 2 knee abscesses) broke down with sinus formation; 1 was improving when the child was removed by the parents; 1 abscess recurred four months later; and three cases developed nephritis which, however, could not be definitely attributed to the injections.

Other cold abscesses, 18 in number (including 2 psoas, 3 lumbar and gluteal, and 2 knee abscesses) were treated by aspiration without injection. Of these, 12 (including all the psoas, lumbar, gluteal and knee abscesses) broke down with sinus formation and 6 healed. Treatment by aspiration is comparatively futile in the case of disease of elbow, ankle, and glands because of the rapid involvement of the skin. Thus, of 4 abscesses at elbow-joint treated, 2 healed and 2 broke down; of 3 at ankle-joint, all broke down; of 15 gland abscesses treated, 13 broke down and 2 healed.

Treatment of Sinuses.

Sinus formation in disease of the spine, hip, and knee is a disaster of high import in the order given. Nevertheless, although a serious problem it is not one incapable of solution. Sinuses can be healed. The material used almost exclusively was Calot's No. 2 paste.

It is composed of: phenol camphor, 3 g.; naphthol camphor, 3 g.; guaiacol, 8 g.; iodoform, 10 g.; lanoline, 150 g.; spermaceti, 100 g. The lanoline and spermaceti are mixed and heated to boiling-point in any kind of vessel, preferably one of porcelain or earthenware. The mixture is stirred continuously to prevent boiling over, and is then allowed to cool to 122° F., and the other ingredients which have been carefully triturated in a sterilised mortar are then added to it. Phenol camphor is composed of equal parts of phenol and camphor; naphthol camphor of one part naphthol to two of camphor. The paste, which must be kept from the light, is solid at ordinary temperatures and is of a fine yellow colour. It is best kept sterile in sterilised glass jars with glass stoppers. It liquefies at about 105°, and is solid at body temperature. For use the jar is placed in hot water about 140° until the paste liquefies. This generally takes about 20 minutes. The ordinary all-glass 10 c.cm. urethral syringe is the most convenient to use for injecting sinuses. One should be just as careful about asepsis as for an aspiration. The jar should always be shaken and the liquid paste injected at a temperature of about 103°.

If there are several sinuses these very often communicate, and when one sinus is being injected the paste appears at the orifices of others. Wherever it appears it should be frozen hard with the ethyl chloride spray and a dressing held over the plugged sinus, so as to enable all the interstices to be further filled. The nozzle of the syringe should be kept within the orifice until the paste has solidified. Solidification may be assisted by spraying ethyl chloride around the sinus opening. The injections are repeated every fourth day on ten occasions and at the end of that time treatment is stopped for a month. If then the sinus remains unhealed, another course of injections should be given. It is not advisable to give more than 20 c.cm. as a dose and it is exceedingly rare to find a sinus suitable for treatment that will hold more than 10 c.cm. Both lanoline and spermaceti are organic substances easily absorbed in the sinus cavity, and are thus less likely to interfere with drainage than mineral substances like paraffin. The other ingredients act in very much the same way as they do in the case of the abscess wall. They provoke a localised hyperæmia and reaction in the sinus wall, with possibly a slight increase of discharge for a day or two following the injection, and in the end promote the cicatrisation of the tuberculous granulation tissue lining the sinus.

Contra-indications.

Calot mentions albuminuria and septic infection causing pyrexia as contra-indications to this form of treatment. Seventeen patients with sinus formation complicated with albuminura were treated; in most of them the albumin did not amount to more than a trace. Only two of these sinuses healed, one of which was from disease of ilium and the other had followed a ruptured psoas abscess. The latter case had no albumin after healing; in the other it continued. None of the other 15 cases showed any improvement; in fact, several have since died of amyloid disease. It was noticed that post-operative sinuses were considerably more difficult to heal than sinuses occurring in the natural course of the disease, 10 only healing out of 27. This was probably due to the greater amount of dense scar tissue present in the wall of the former type of sinus rendering purification, revascularisation, and healing more difficult. No case was treated by this method in which the degree of sepsis was at all marked—i.e., cases with discharge at all profuse or with evening temperature approaching 100°. Of 80 other cases, in which the sinuses had arisen without operation, 58 healed entirely on treatment and 22 remained unhealed. Of the cases which did not heal, one, a psoas sinus, developed acute nephritis during his second course of injections and he eventually died; another patient with an ankle sinus developed a severe septic reaction, amounting almost to erysipelas, around the sinus and treatment had to be stopped; two cases were taken home by parents before treatment could be completed; and four cases developed acute dermatitis around the sinus and the injections were stopped in consequence. There is a small proportion of patients whose skin becomes severely irritated by the paste, probably owing to an idiosyncrasy to iodoform.

Of the total 124 cases, the culture of secondary infecting organisms was attempted in 61. The most common micro-organism was *Staphylococcus albus*, alone or in combination with streptococcus or with

a Gram + diphtheroid bacillus. This last was grown in seven instances. Coliform organisms were grown from sinuses on six occasions, being *Bacillus coli communis* in three of these. The presence of streptococci proved an insurmountable barrier to success in treatment in most cases. *Staphylococcus aureus* was an equally difficult invader to deal with. In no case in which a coliform bacillus was present was healing obtained. The sinuses most easily healed were those found sterile on culture or infected merely with *Staphylococcus albus*, alone or in combination with the diphtheroid bacillus.

Treatment of Ulcers.

Tuberculous ulcers can be very successfully treated by means of an ointment containing the same ingredients as Calot's paste in the same strength. If the cetaceum is omitted and double the quantity of lanoline used a very good ointment is obtained, which seems to provide the necessary stimulus to healing in shallow ulcers which it would be impossible to inject with the paste.

Treatment of Tuberculous Joints.

In "Indispensable Orthopædics" Calot warmly advocates injection of his No. 1 fluid into joints affected with tuberculous arthritis with the idea of causing sclerosis. Two c.cm. or more of the fluid are injected into the joint by means of a Record syringe once weekly for ten weeks through suitable skin punctures. A rest of a month is then given followed by another course of injections if necessary. A number of tuberculous knees were treated by this method, but in eight only was treatment carried out long enough to give one a fairly accurate idea of its value. In one adult an abscess and sinus followed the fifth injection. The sinus was successfully treated by means of injections of paste and excision was performed later with good result. In two other adult cases abscess formation occurred during treatment and this complication is still being treated in one; in the other there has been no sign clinically of active disease during the last four months and the patient is now ambulant. Other two adult cases both with extremely painful knees ankylosed in extension benefited considerably on treatment, and one left hospital five months after its completion wearing a celluloid splint over a firmly ankylosed and painless knee. The other showed signs of fresh activity of disease after having been ambulant for three months. Excision had to be performed in this case also. The remaining three cases treated were children with pulpy synovial swelling of the knee-joint, in only one of which was there any erosion of cartilage demonstrated on X ray examination. All three cases did extremely well. They each had only one course of injections. In all three swelling of the joint was found to have considerably diminished in size about two months after treatment had stopped. In the two cases in which the synovial membrane alone was diseased, movement which had only been possible through a few degrees gradually increased in range until six months after treatment had ceased flexion and extension was possible through 90°. In the third case firm ankylosis occurred in the position of extension. All three cases were dismissed in celluloid splints clinically cured less than a year after treatment had been commenced. The treatment might then be described as having been successful only in the early lesions of children. Only five cases of tuberculous hip disease were treated by this method. All five were children with hips still extremely painful on manipulation and showing no signs of progress after many months of extension in bed; in none was abscess or sinus present. In one abscess formation occurred after the eighth injection; this complication was satisfactorily treated to a conclusion and there was latterly no pain on attempted manipulation of the joint. In another child an abscess formed during the second course and here again pain was latterly absent. The remaining three showed marked improvement on treatment, and two months after the second course of injections had ceased each had painless hip and had put on weight.

Treatment of Tuberculous Glands.

Practically no success has been obtained in treating tuberculous glands by injections. No matter how careful one's technique in aspirating, a gland abscess, once formed, almost invariably gives rise to a sinus. It has been found that those compounds specially recommended as causing liquefaction in caseated glands do not fulfil that expectation. They cause considerable pain on injection and very often provoke a severe reaction in the shape of marked localised swelling and tenderness. The sulphoricinate of soda compound is particularly severe in this respect; the skin over the gland generally sloughs and leaves a nasty fungating ulcer. Camphor naphthol in glycerine also provokes a severe reaction, although not nearly so severe as the one first mentioned. It has never in our experience caused liquefaction in a gland mass, although it does cause pus already formed to become more liquid and easier to aspirate. Six cases were tried with a compound termed ethyliodoricio-oleate made by Burroughs Wellcome and Co. The enlarged gland masses were injected bi-weekly on ten occasions; although no severe reaction resulted, the treatment was found to be of little avail as far as the absorption of the tumour was concerned. Probably it is better to try treatment by aspiration in the case of a gland abscess already formed, as even if it does break down on treatment, as it almost always does, the cosmetic result on healing is probably better than if one operated at that stage. But in cases of ordinary enlarged tuberculous glands before the stage of abscess or sinus formation there is no doubt that operation combined with sanatorium treatment gives much the best result.

In concluding this paper I should like to thank Dr. G. Watson, the superintendent, and Mr. G. Taylor, the visiting surgeon, for liberty to make use of the material provided. I should like also to thank Dr. E. McPhee, Dr. G. C. Campbell, and Dr. A. H. Bowman, former residents of the hospital, for permission to use their notes on cases under their charge for the purpose of this article.

Clinical and Laboratory Notes.

TWO CASES OF STRICTURE OF THE JEJUNUM.

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ASSISTANT SURGEON TO THE LONDON HOSPITAL.

THE following cases are considered to be of sufficient rarity to be placed on record.

Syphilitic Stricture of Jejunum.

J. K., male, aged 58, was admitted with a history of seven months abdominal pain coming on two hours after meals. The pain was colicky, appeared suddenly, and died away gradually, and was occasionally relieved by food. It might also persist for one or two days without relief, but on two occasions the patient was free for about a week. The pain began in the left hypochondrium and then radiated round the lower abdomen to the right, finally spreading diffusely over the abdomen; it was accompanied by much rumbling of the intestines. The patient had been doubled up occasionally and awakened at all times of the night.

Vomiting occurred several times but it had little relation to the pain and was present with constipation; it often relieved the pain. The vomit varied in amount and sometimes contained undigested food; there was never any hæmatemesis. Constipation was prominent and was always associated with the pain; for two months it had alternated with slimy diarrhœa. The constipated stools were described as being like nuts and the patient said that he had lately lost a considerable amount of flesh. There was no melæna and no jaundice.

On examination the abdomen was found to be distended especially in the flanks. Visible peristalsis could not be discovered. There was tenderness at a point in the left hypochondrium corresponding to the site of origin of the pain, and the rectum, which was empty, was dilated.

Radiographic Examination.—An opaque enema was administered and the appearance was in favour of an annular obstruction of the ascending colon. An opaque meal was advised but the patient's condition made it impracticable. The constipation became worse and proved intractable to enemata. Distension increased, and it was decided to explore the abdomen.

Operation.—The abdomen was opened by a right paramedian incision. The cæcum was collapsed and no abnormality was discovered in the large intestine. The small intestine was found to be enormously dilated in its upper part. The contracted portion was traced upwards and led to a ring-like stricture which was hard and had almost occluded the lumen of the gut. Above this the gut had a diameter of 2 inches, the wall was thick, œdematous, and somewhat congested. The neighbouring mesenteric glands were enlarged, and one of them was enucleated for microscopical examination. In view of the state of the intestine above the stricture it was decided not to perform lateral anastomosis, and the stricture was brought out in a loop. Jejunostomy was then done with a Paul's tube, and a spigot was passed through the mesentery.

After operation large quantities of feculent fluid drained from the tube, but the patient developed bronchopneumonia on the fourth day and died on the seventh.

Pathological Reports.—The excised gland was described as a "fibro-caseous and granulomatous lymphatic gland from mesentery, possibly Hodgkin, possibly syphilitic. No evidence of tuberculosis."

The post-mortem report described the condition as follows: "Almost healed ulcer encircling and causing great stenosis of lumen of intestine, 8½ feet below duodenojejunal flexure and 10½ feet above the cæcum. Thickening by tough pliable fibrous tissue of wall of intestine at site of ulcer. Great distension (9 cm. circumference) and muscular hypertrophy (0·3 cm. thick) and œdematous thickening of mucosa in jejunum above stricture. Severe mucous catarrh above stricture. Moderate distension without hypertrophy of small intestine below stricture. Collapse of large intestine. Paul's tube 6 cm. above stricture. Extensive fæcal staining of laparotomy wound in abdominal wall, none of peritoneum. Severe general exudate of fibrin and pus throughout abdomen. No other ulcers or scars in intestine. Lymphatic gland in middle tier of mesentery entirely replaced by grey dense fibrosis and one rubbery area of necrosis. No abnormality save for slight chronic inflammatory swelling in other mesenteric glands. No abnormality in testicles or epididymis. No scar on penis. Purulent bronchitis and slight acute bronchiectasis with purulent nodules of peribronchial consolidation becoming confluent by an intervening red fibrinous pneumonia throughout the right lower lobe and in lower and posterior border of right upper lobe. The post-mortem Wassermann reaction was positive."

Secondary Carcinoma of Jejunum.

J. H., aged 68, was admitted with a long history of abdominal pain and flatulence. Two years before she had an attack of abdominal pain and vomiting. This was associated with sweating, and the pain caused her to double up. The attack was followed by jaundice with dark urine and pale motions. Similar attacks occurred three months, and again six weeks, before admission. Nine days previously an even more severe attack occurred in which there was slight jaundice and pale stools. The vomiting had become persistent in the last 26 hours and the vomit had begun to smell. She had passed no flatus for four days, and her boweis had not been opened since the persistent vomiting started.

On admission she had a temperature of 98° F. and a pulse of 128. There was some distension of the abdomen and slight tenderness in the right lumbar region. The patient was very fat, and it was difficult to elicit any further signs. An enema was administered with a large fæcal result but no flatus was passed. Her stomach was washed out prior to operation. A diagnosis of obstruction due to gall-stones was made and immediate operation decided upon.

Operation.—Right paramedian incision. Great distension of the first 6 feet of intestine terminating at a nodular constriction which felt very hard. Secondary nodules on the peritoneum. The growth, together with the adjacent gut, was brought out as a loop and the mesentery was transfixed with a spigot. The loop of gut was incised and a rubber tube passed upwards was sutured and invaginated inwards forming a jejunostomy. It was decided to perform this operation because of the fæcal vomiting and the marked distension of the proximal gut. The tube discharged well after the operation, but it became loose and was removed on the fifth day. On the eleventh day after the first operation her general condition was good, her temperature normal, and her pulse 88, and it was decided to perform the second stage of the operation.

Second Operation.—The protruding loop with the jejunostomy and growth were removed with the cautery, and the clamped extremities of gut were tied with silk ligatures. The abdomen was then reopened and the ligatured ends of the gut embedded with purse-string sutures. A lateral anastomosis was performed, and a drainage-tube was passed through the abdominal wall, which was then sutured.

The patient appeared to do well, but collapsed on the second day.

Pathological Reports.—The report on the specimen removed stated that there was a greyish-white nodule at the mesenteric border of the gut, partially encircling the intestine and producing marked constriction at this point. Microscopically it was seen to consist of secondary tubular and columnar-celled carcinoma invading the small intestine.

The post-mortem report was as follows: "General fibrino-purulent peritonitis. Carcinoma of the gall-bladder. Almost pure cholesterin calculus (2·3 by 1·7 cm.) filling thin fibrous walled gall-bladder. Moderately firm, partly medullary, white, coarsely granular carcinomatous infiltration of fundus of gall-bladder (3 by 2 cm.). Soft polyp of medullary growth projecting into lumen of gall-bladder and adherent to stone. Nodular carcinomatous infiltration of omentum where adherent to fundus of gall-bladder with formation of lump of secondary carcinoma (about 4·5 cm. in diameter). Carcinomatous infiltration extending from this secondary mass through peritoneum and slightly into muscularis of hepatic flexure of colon, causing slight constriction of colon at this point. Small ill-defined secondary nodules in peritoneum of mesentery, especially ileocæcal angle and ascending colon. Secondary carcinomatous nodule in peritoneum of lesser curve of pyloric canal invading muscularis. Tough creamy-white nodule in left round ligament at internal abdominal ring. No secondaries in Douglas's pouch nor in liver or any gland. Numerous fat necroses in pancreas. Intact lateral anastomosis 4½ feet below duodenojejunal flexure. Distension of small intestine above anastomosis.

Comment.

Syphilis of the alimentary tract, except at its commencement and its termination, is an exceedingly rare condition. A stricture in the small intestine leading to such obstruction as in the first case is extremely uncommon because the fluidity of the contents usually results in the obstruction giving few symptoms. Therefore the rarity of the case when due to syphilis must be established. I can find no such case recorded in the literature, and surgical text-books do not mention the possibility. Another feature of the case was the presence of gummatous glands in the mesentery and at the time of the operation this led to the belief that the case was one of carcinoma with secondary deposits in the glands.

The second case is interesting in that a carcinoma of the gall-bladder, small in itself and with no secondaries in the glands or liver, gave rise to constriction affecting the gut both in the large and small intestine. At the time of operation the ring carcinoma in the jejunum was thought to be primary and the mass near the liver to be secondary, whereas the reverse was the true state of affairs. Cases in which a secondary nodule of carcinoma causes an obstruction of the small intestine must be extremely uncommon, especially so closely simulating a primary growth.

The question of *treatment* in these two cases presented difficulties which were not surmounted. It was decided to do a jejunostomy in each case because of the enormous distension above the stricture, in the hope that drainage of the intestine would relieve the acute obstruction and allow secondary excision of the stricture and anastomosis to be performed later. In the first case the patient became rapidly dehydrated and died rapidly. In the second, the additional operation was performed but the patient died rapidly of general peritonitis although the anastomosis was intact and every care was taken to prevent the spread of infection from the wound. Despite the fatal results, however, it is felt that the principle of drainage of the gut is a right one. The alternative method embodying this principle would be to resect the infected portion of the gut and effect a lateral anastomosis by the introduction of a tube for drainage of the jejunum above the anastomosis. This would be done after the method of a Witzel's gastrostomy and would not entail a further operation for its closure. End-to-end anastomosis in such cases appears to be impracticable

because of the great difference in thickness of the walls of the proximal and distal segments of the intestine. The alternative method has the disadvantage of prolonging the operation in unsuitable subjects and the risk of leakage is necessarily increased.

In the first case the findings were a complete surprise as the history and the radiographic examination suggested an obstruction of the large intestine. In the second case diagnosis of obstruction due to a gall-stone was made, but it was never imagined that it had been produced in such a circuitous way.

In conclusion I wish to thank Mr. H. S. Souttar and Mr. Russell Howard, in whose beds these patients were, for permission to publish this account.

A CASE OF TUBERCULOUS SALPINGITIS ASSOCIATED WITH ACUTE GONORRHŒA.

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THE following case shows some unusual features:—

The patient was an unmarried girl clerk, aged 18, and was admitted to the Royal Free Hospital on May 15th, 1925, complaining of pain in the lower abdomen and vaginal discharge. The pain was of a sharp and shooting character, and worse on the left side of the abdomen. About April 5th she had noticed abdominal pain and vaginal discharge; that was a few days after admitted misconduct, and a fortnight later she was sent to the infirmary where, after a week's local treatment, a right Bartholin's cyst was excised. On leaving the infirmary she had pain in the left groin. She was sent up to the V.D. Department at the Royal Free Hospital for treatment. A diagnosis of acute gonorrhœa and gonococcal salpingitis was made, and she was sent to one of the hostels in connexion with the department.

The findings then were as follows: She had a profuse purulent vaginal discharge, the cervix and urethra were inflamed, and there were some hard and nodular lymphatic glands in the groin. There was an indefinite tender mass on the left side of the pelvis, and the uterus was not palpable apart from the mass. The rectum and anus were normal. The menstrual history showed no abnormality until the onset of illness, since then there had been amenorrhœa. The onset of periods was at 15 years, the periodicity 3–4 days every 28 days, the loss rather profuse. The circulatory and respiratory systems were normal. There was no past illness except measles, but there was a well-marked family history of tuberculosis. Films from the cervix and urethra showed much fresh pus and organisms resembling gonococci, and the Wassermann reaction was negative. She had a temperature of 101° F. and a pulse of 112. She was seen again on May 15th and found to have generalised abdominal tenderness and involvement of both tubes, and was admitted to hospital.

Condition on admission: She had a temperature of 99° and pulse 96, and was rigid over the left lower abdomen and tender all over the abdomen, especially on the left side. Vaginal examination showed both tubes swollen and tender. She was treated with belladonna fomentations to the abdomen and hot douches of 2 per cent. potassium permanganate. The abdominal pain improved on this treatment, and it was decided to operate if possible when the temperature was quiescent. The temperature remained irregular for 10 days, the maximum being a rise to 101·8°. After this, for a further period of seven days, the temperature became more swinging in character with a well-marked 6 P.M. rise and then settled down to normal for three days previous to operation. Urethral films taken during this period showed pus and gonococci. At the operation the findings were as follows: The sigmoid colon was adherent to the bladder, left tube and ovary. These adhesions were separated, and a small abscess was opened which had been enclosed by them. There was pus also in the pouch of Douglas. The pus was thick, yellow and blood-stained. The left ovary was much enlarged and dark in colour. The left tube was thickened, inflamed, and adherent to the ovary by its fimbriated end. The uterus was normal, but infantile in type. The right ovary was normal. The right tube was slightly thickened and inflamed, but patent. A left salpingo-oöphorectomy was done. The pelvis was swabbed out with collosal argentum, and the wound closed without drainage. The ovary on section showed a blood cyst and a degenerate corpus luteum. The tubes were not patent. The pathological report on sections from both tube and ovary showed well-marked tuberculosis. The pus from the peritoneal cavity was sterile and contained polymorphonuclear and mononuclear cells. The temperature after operation was irregular for four days, and then began to swing again, the maximum rise being at 6 P.M., and the maximum height 103°. The rise gradually decreased, and settled to normal on the sixteenth day following operation. Treatment for gonorrhœa was resumed on the eighth day after operation. Saline and 2 per cent. lactic acid douches were given, and the urethra painted with 5 per cent. mercurochrome. Films taken from the urethra four days after treatment showed some pus and gonococci. Films taken on discharge, from urethra showed much fresh pus and no gonococci; from the cervix, epithelial cells, a few pus cells and no gonococci.

The abdominal tenderness gradually disappeared, and the wound healed by first intention.

On discharge the patient had still an erosion of cervix and some vaginal discharge but her general health was good, and she was afebrile. She was transferred to Whipp's Cross Infirmary for open air treatment for tuberculosis and local treatment for gonorrhœa.

I am indebted to Dr. Vaughan Sawyer and Dr. Margaret Rorke for permission to publish this case.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

AT a special meeting of this Section held on Jan. 19th Mr. V. WARREN LOW, the President, took the chair, and Prof. M. T. FINNEY, of the Johns Hopkins Hospital, Baltimore, read a paper on the

PATHOGENESIS OF GASTRIC AND DUODENAL ULCER,

with a a consideration of the general rules of treatment. Prof. Finney began by surveying research into the subject from the investigations of Matthew Baillie (1793) and Abercrombie (1824) until recent times. The origin and persistence of gastric ulcer, he said, had been a source of much speculation and experiment, and most observers had agreed that the action of gastric juice played an important part in the development and continuance of ulceration. Still, the action of gastric juice alone was not sufficient in itself to start ulceration in normal gastric mucosa, nor did it prevent the rapid healing of artificially produced defects when the blood-supply had not been interfered with. Ninety-eight per cent. of ulcers of stomach and duodenum were in the region of the pylorus, the posterior part of the lesser curvature, the pyloric antrum, and the first part of the duodenum—i.e., in the parts supplied by the right gastric artery and its supraduodenal branch. There seemed to be a relationship between these two facts. If the narrow margin of safety in the human being was encroached upon by an injury to the mucosa, the eroding action of the gastric juice probably sufficed to develop a chronic ulcer. Prof. Finney proceeded to review the various theories of causation—inflammatory, neurogenic, circulatory, bacterial, digestive, and corrosive.

Malignant Transformation of Ulcers.

Cruveilhier in 1829 had been the first to suggest that these ulcers might take on a malignant transformation, went on Prof. Finney; the matter was of importance because the extent of a surgeon's belief in the possibility of such change would influence his decision what operation to employ. The percentage of cases in which malignant change had occurred in a simple ulcer appeared to have varied from 5 to 2½, and there must, therefore, be standardised criteria in order that comparisons could be made. There were certainly well-authenticated cases in which carcinoma had been preceded by a long history of ulcer. In 799 cases operated upon at the Mayo Clinic for gastric ulcer, 4·1 per cent. died of cancer during the seven-year period, while in 1610 cases quoted by Ewing the frequency was 2·2 per cent., though it was thought that in some of these the lesion had been malignant from the start.

Operative Treatment.

A plastic operation on the pylorus, continued Prof. Finney, had first been carried out in 1886 by Heineke, and in the following year it had been done by Mikulicz. Kocher's side-to-end gastro-duodenostomy following pylorectomy was reported in 1891. In 1885 it was considered that the right treatment for gastric ulcer was medical, but Welch, writing in that year, admitted that resection of gastric ulcers which resisted all other methods of treatment was a justifiable operation. Surgical treatment was largely advanced by the idea that ulcers might become carcinomatous, as well as by the grave danger of hæmorrhage, perforation, or obstruction. Radiography had helped to establish a definite syndrome. Operations for ulcer of the stomach could be classed as either conservative or radical. The first group was further divisible into (1) procedures directed to local excision, cauterisation, or suture of the ulcer; (2) local excision plus gastroenterostomy or pyloroplasty; (3) gastroenterostomy or pyloroplasty alone. An operation was radical when not only the ulcer, but also the part of the stomach which developed 90 per cent. of the ulcers, was removed. In his choice of the operation in a given case the surgeon should be largely influenced by the condition of his patient and his ability to withstand hæmorrhage or perforation with resultant shock. Such local conditions as dense adhesions would have a limiting effect on the operation. If operation were done in the quiescent stage, the patient's condition would not loom so large, and in that case the opinion formed about the operation needed would depend on (1) the importance of removing the ulcer-bearing part of the stomach, (2) the efficacy of reducing the acidity by a large resection, (3) the possibility of carcinomatous degeneration.

Pre-operative Preparation.

Unless the operation was to be for the relief of urgent conditions, said Prof. Finney, each patient should be carefully prepared beforehand, for this reduced infection to a quite negligible quantity. The routine practised in his hospital included frequent antiseptic cleansing of the teeth, prescription of a sterile diet (cooked foods, pasteurised or boiled milk, eggs, orange-juice, boiled water, &c.), and, if gastric stasis was present, lavage of the stomach once or twice a day. It was found that the acid stomach would sterilise itself in 48 hours provided no infecting matter was meanwhile ingested. This did not apply, however, to ulcerating carcinoma of the walls of the stomach, the *Streptococcus pyogenes* being commonly found in these cases. Efforts to sterilise the gastro-intestinal tract by drugs had been futile. Careful physical examination of patients should never be omitted, unless the urgency for operation was very great. Starved and dehydrated patients should first be brought into an improved condition. With regard to the anæsthetic, the claims of local as against general anæsthesia should be carefully weighed, for regional nerve-block had given excellent results, though it required a thoroughly capable administrator. In the actual operation it was necessary to pay scrupulous attention to details of technique and of asepsis; the tissues must be gently handled and undue haste avoided. Each surgeon probably had a favourite operation, but he should not permit himself to make use of it on every occasion, as to do so was to court disaster.

Summary.

Summarising his views, Prof. Finney said that no surgical procedure should be carried out on the stomach without previous consultation with a competent physician. Resection of an ulcer did not mean that it would not recur. As a general rule, pyloroplasty or gastroduodenostomy, associated when possible with resection of the ulcer, would be his method of choice. This relegated gastroenterostomy and extensive gastric resection to subordinate places. Still, from inability to mobilise the duodenum satisfactorily, pyloroplasty was not always a practical proposition. When extensive resection of the pyloric part of the stomach was indicated, gastroduodenostomy by the Harberer-Finney method was the operation of choice when it could be done. In the presence of malignant disease, if operation was indicated at all, the most radical possible procedure was really in effect the most conservative. This principle was not the guide, however, in benign conditions, and indeed the reverse was true.

Discussion.

Sir ANTHONY BOWLBY proposed a cordial vote of thanks to Prof. Finney, and referred to his distinction in all branches of general surgery; at the same time he expressed his high appreciation of Prof. Finney's activities in France during the late war, when he served as Chief Medical Adviser to the American Army.

Sir JAMES BERRY (President of the Royal Society of Medicine) seconded this vote of thanks, which was carried with acclamation.

Dr. LEON JONA (Melbourne) gave his views on the pathogenesis of duodenal ulcer, recounting some experiments he had performed on dogs. On tying the main pancreatic duct, he found that duodenal ulcer resulted every time, and his research had convinced him that diminution or absence of the normal pancreatic juice was a factor in the pathogenesis of gastroduodenal ulcer. The usual situation of the ulcers bore out this view.

Mr. E. R. FLINT (Leeds) agreed with Prof. Finney about the superiority of gastroduodenostomy to gastroenterostomy. He had himself operated on nearly 200 such cases, and in only nine of them had he failed to mobilise the duodenum. His technique differed somewhat from that of Prof. Finney, as he made his anastomosis in the second part; and he did not use a clamp on the duodenum nor excise the mucosa. Also, he did not take in gastric mucosa with the inner stitch if it could be avoided.

Mr. F. A. JEANS (Liverpool) spoke of a series of 36 cases of hour-glass stomach with a 15 years' history; in this series only two were malignant, which showed how unlikely it was that even long-standing ulcer would result in malignant degeneration. He also referred to a class of people who, whatever was done for them, were persistent ulcerators and perforators.

Mr. R. P. ROWLANDS said that he believed obstruction in the duodenum to be an important cause of these ulcers. On the continent, and to some extent in this country, there was at present a wave of enthusiasm which led to surgeons doing too much; personally, he could never see the advantage of performing partial gastrectomy for simple ulcer, and the mortality from this operation was much too high. For many years he had been a strong believer in Prof. Finney's operation. He had been very pleased to hear him insist on the importance of adequate preparation of patients before operation.

Mr. A. J. WALTON agreed that there was a tendency to do too much operatively for gastric and duodenal ulcer. Partial gastrectomies were mostly not only wrong and dangerous, but were also unnecessary. These ulcers were a disease peculiar to civilised man. Up to last June he had had 317 cases of ulcer of the lesser curvature, 305 of ulcer of the duodenum, 165 pyloric ulcers—figures which did not support the view that in cases of ulcer there was some peculiarity in the anatomy of the duodenum. A. Hurst had drawn attention to the importance of hyperacidity, and had pointed out that in some individuals this was associated with a congenital malformation; Mr. Walton attached considerable importance to this factor in the ætiology. He thought it was definitely increased by the modern over-indulgence in cigarettes. Carcinomatous degeneration occurred in so small a proportion of ulcers that there seemed no warrant for carrying out large gastrectomies on account of that fear. For hour-glass stomach he did a wide wedge-resection; if that was not possible he resorted to partial gastrectomy.

Prof. C. A. PANNETT said that none of the ulcers produced in animal experiments were identical with those found in the human being. In man the ulcers owed their origin, he believed, to a specific organism which had not yet been discovered, and a requisite condition for the formation of ulcer was a combination of pyloric and intestinal secretions. He considered that the pyloric end of the stomach was the region at fault. Sometimes ulcers formed in Meckel's diverticulum and perforated; they were peptic ulcers. The infection came from the intestinal canal, not from the blood stream.

Mr. HERBERT PATERSON believed that there was no dependable evidence that in even 5 per cent. of cases a simple ulcer assumed a malignant form. If even 5 per cent. did so, it would be expected that a considerable number of people operated on for simple ulcer would die of carcinoma, but that was not the fact.

Reply.

Prof. FINNEY, in reply, said that he did not feel that he was an enthusiast; he did not do pyloroplasty every time he opened an abdomen. But his experience had shown him that it was the best method whenever it was feasible and practicable. In 85 per cent. of his cases he had been able to do it with satisfaction. When there seemed likely to be any tension, a thing to be carefully avoided in the abdomen, he desisted and carried out gastro-enterostomy. For indurated ulcer he did a wide resection. Surgery demanded as clear and accurate a diagnosis as all the resources at command made possible; it should be the resultant of the best skill of the radiologist and physician as well as of the surgeon, and every test likely to be of value must be used. When, on opening the abdomen, he found no demonstrable, palpable lesion, he did nothing. He thanked Dr. Jona for his suggestion, which might be fruitful; on arriving home he would go into the question. He concluded with a word of gratitude to Sir Anthony Bowlby and the staff under him for the kindly coöperation shown to him and his colleagues in France on the entry of the American Army into the war.

SECTION OF OBSTETRICS OF THE ROYAL SOCIETY OF MEDICINE AND MEDICO-LEGAL SOCIETY.

THE ETHICAL, LEGAL, AND MEDICAL ASPECTS OF ABORTION.

A JOINT meeting of the Section of Obstetrics of the Royal Society of Medicine and the Medico-Legal Society was held on Jan. 21st, Lord Justice SALTER in the chair.

The discussion was opened by Dr. J. S. FAIRBAIRN and Lord RIDDELL, whose papers are published on pages 217 and 219 respectively.

Dr. RUSSELL ANDREWS apologised for the absence owing to influenza of Dr. T. WATTS EDEN, whose place he had been asked to fill at the last moment. He agreed in the main with Dr. Fairbairn, but said that it was an exaggeration to state that the old indication for abortion—danger to the life and health of the mother—had been thrown over. He also disagreed with the suggestion that, in many cases where abortion was proposed to consultants, there had not been a fair trial of medical means of relieving the distressing symptoms. In most cases the patient's medical attendant had made attempts to get rid of the troubles before considering abortion. Otherwise he thought Dr. Fairbairn had put the case very fairly, and had suggested the difficulties in which an honest man might find himself in trying to do the best for his patient and yet keep within the law. Cases brought to the specialist by a doctor usually required a great deal of consideration, but cases that came on their own were very often easily dealt with. The patient and her husband were usually unaware that there was any legal bar to induction of abortion, and a few minutes' commonsense conversation would convince both that there was no indication. A small number had to be told that the doctor could have nothing more to do with their case, and in a few more cases it was clear that continuation of the pregnancy must mean danger to life or health.

Borderline Cases.

The borderline cases were very difficult, some of the most difficult a consultant ever had to deal with. He sympathised very much with the patient—generally a tired, anxious, excited woman who felt that she could not go on, not necessarily from selfish motives, but for the sake of her husband and children, to whom she would be very little use for many months. It was necessary to guard against being swayed too much by sympathy. Another factor was the fixed idea in the minds of many husbands and wives that pregnancy was very dangerous; often the patient had been told by doctor or midwife that she must never become pregnant again. When he (the speaker) had considered that this advice had been given lightly he had remarked that there was a difference between advising against a future pregnancy and agreeing to destroy a life that had been begun. The answer he received was "There would not be such a difference if only doctors would be more logical." When the question was one of impairment of health the difficulty that arose was the difference of opinion as to how serious and how permanent the damage to health must be to justify abortion. Cases could only be judged on their merits. The consultant longed for a definite peg on which to hang his decision.

Dr. Andrews quoted two examples of the borderline case in which he had considered termination of the pregnancy justifiable.

CASE 1.—A lady of 37 had had five children, the last three being at that time aged 4, 2½, and 1 respectively. She had had very poor health during the previous pregnancy, being almost an invalid. Her doctor had strongly advised her against having another child on account of the strain. Her health for the last 12 months had been very poor, though there was no organic disease, and her symptoms, though neurasthenic, were very real to her. She was two months' pregnant and her health had greatly deteriorated in that time. She was haggard, anxious, losing weight, suffering from insomnia, severe nausea, and considerable tinnitus. She was devoted to her children and said she felt she could not look forward to another year of invalidism during which she could take very little part in their upbringing or be any companion to her husband.

CASE 2.—A poor woman of 43 had had five pregnancies; three had gone to term and of these children one had died and two were delicate; she had had two spontaneous abortions at 4½ and 5½ months respectively. Throughout all the pregnancies she had been very largely confined to bed, chiefly through uncontrollable retching. She had never been in good health, but during her pregnancies she could not look after her family or do her work. She had very poor physique and weighed under 7 st. At the time of examination she was 2½ months' pregnant and again had vomiting and retching.

In these cases it had not been possible to say exactly what damage would be done to the patient's health by continuation of pregnancy, and there was no danger to life. Nevertheless he had felt he could satisfy his own conscience and make a fair show before any tribunal.

Medical Responsibility to the Law.

Sir TRAVERS HUMPHREYS said that those responsible for the terms of the debate had divided the subject into three parts—ethical, medical, and legal. From his point of view, however, it divided itself into two: abortion which was criminal and abortion which was not criminal. By lawful abortion he meant the steps taken by a qualified medical man to get rid of a condition in his patient which he considered, using the best of his skill and ability, and of course honestly, on medical grounds and on medical grounds alone, to be dangerous to the safety of the patient. He used the word "safety" advisedly, because the purely medical question was not one with which the law was concerned. No doctor who had used the best of his skill and judgment in the sole interest

of his patient need imagine for a moment that the law would call him to account. It had been stated, and truly stated, that under such circumstances the sole concern of the medical man was the welfare of his patient, and that welfare was her medical and not her social or economic welfare. He agreed with Lord Riddell and Dr. Fairbairn that the doctor should confine himself to the medical question. It might be that the patient who was asking for abortion might herself be considering such results of her pregnancy as a diseased child or disgrace to herself, but these were matters in which a doctor at that stage was in no way concerned. They might well form the subject of advice to his patient at other times, but when once the condition of pregnancy had arisen the golden rule must be that the doctor was not entitled to consider anything but the health and future of his patient on medical grounds. When a doctor in the exercise of his discretion had decided to induce abortion there was no question of law or ethics. Under what conditions and in the presence of what symptoms a doctor was entitled to take the extreme step of interfering with the ordinary course of Nature was a very interesting matter for medical men and for the intelligent man in the street, but it would be an impertinence for one who claimed no medical knowledge to express any views.

Criminal Abortion.

When we turned to the question of criminal abortion, said Sir Travers Humphreys, we plunged at once into the realm of law and ethics. The legal question was extraordinarily simple. In this country, for a very long time, criminal abortion had been regarded as a very serious offence. In the United States, in France, and in Belgium, to the best of his knowledge, the law was very similar to our own. In the Belgian penal code there was a provision that any person who caused abortion, even without desiring to do so, was liable to extremely heavy punishment if he had been guilty of violence or ill-treatment. Those who looked at French journals might be disposed to doubt whether the practice of abortion was regarded in France with quite the same distaste that it was in this country, but the tone of the journals had no bearing on the law. In a civilised country criminal abortion would never be found regarded as other than grossly improper and in the last degree punishable. What Dr. Fairbairn had remarked about the approval of the practice by the Soviet Government did not affect this observation; he had used the term "civilised" country. It was, he supposed, universally recognised that the practice of abortion and any operation or means to that end taken by any other than a highly qualified and skilful person, must be a source of the greatest possible danger to the woman concerned. It must needs be an intolerable burden to the medical profession if the doctor had to say on other than medical grounds whether he was to relieve a woman of her condition. There was no doubt that the increasing prevalence of the crime in this country was very largely due to the widespread belief that abortion, at any rate in the early stages of pregnancy, might be induced without any risk to the woman concerned. He had heard Sir Bernard Spilsbury state in the witness-box that he entirely disagreed with that idea, and that there was no such thing as safely-procured abortion. If that were so, Sir Travers hoped that medical men would lose no opportunity of impressing the fact upon those whom they might think likely to be under a misapprehension as to the danger of the practice.

The Ethical Aspect.

He supposed that by ethics was meant in this connexion that branch of philosophy that dealt rather with things as they ought to be than as they were, with rules of conscience rather than with rules of law. It might be said that it must be ethically wrong wilfully and intentionally to break the laws of one's country, but he was not so sure about it. Even at the risk of being considered a very immoral person, he would say that there might be, and had been, cases in which it was very difficult, if not impossible, to attribute any moral blame to a person who had helped a girl out of her trouble. He quoted as an example a case recently heard at the Central Criminal Court where a French girl had refused repeated offers of marriage from the young father of her child, had refused his offer to send her back to France for the confinement, and had insisted on procuring abortion, telling him that if he would not help her she would go to her girl friends who would. He had asked the advice of a much older man, who had assured him that it was a simple matter and had referred him to a "doctor" for the operation. The girl had died of peritonitis, and the doctor, the young man and his friend were all charged with manslaughter. The judge refused to punish the lad with a day's imprisonment, and he (Sir Travers) was glad of it. It was difficult to regard that young man as having done anything but what most men would say was right under the circumstances. Anybody who deliberately made up his mind to break the law must be prepared to take the consequences, but if he were able to prove that his motives and intentions were above suspicion and that he had acted from the dictates of his conscience, he had not much to fear, for our judges were men before they were judges, and judges were, and remained, very human.

Pregnancy and Tuberculosis.

Dr. HALLIDAY SUTHERLAND said that while gynæcologists mentioned tuberculosis as a very probable indication for abortion, the question did not loom large in the minds of those who were chiefly concerned in the treatment of tuberculosis. Tuberculosis had no constant influence on pregnancy and pregnancy had no constant influence on the course of tuberculosis. Everyone knew cases where a woman suffering from the disease brought forth a healthy child, where pregnancy was associated with an increase in the disease and where it was accompanied by an amelioration so marked that the physician was led to give an unduly favourable prognosis. Figures from the Stockholm Maternity Centre had been published dealing with the influence of pregnancy on the expectation of life of the tuberculous woman. In 203 pregnant diseased women and 396 non-pregnant the results at the end of a year showed that of the pregnant 12·8 per cent. were dead, of the non-pregnant 14·6 per cent. Two years later 26 per cent. of the pregnant had died and 30 per cent. of the non-pregnant. On these figures the tuberculous woman who became pregnant had a better expectation of life than the woman who did not. Other figures showed that pregnancy in the second stage exerted an unfavourable effect on 12 per cent. of tuberculous women. Gynæcologists were at complete variance; some had statistics showing that the aborted lived longer, some that they died sooner, but their statistics had the disadvantages that they did not specify the stage of the disease, and the early and late stages were not comparable. It must be remembered that a very early diagnosis of tuberculosis might be of considerable value to those who desired for non-medical reasons to arrange an unimpeachable, unassailable abortion. He asked whether the profession was prepared to prolong the lives of 12 tuberculous women by paying the price of killing one hundred fœtuses. He hoped the medical sanctions for abortion would be curtailed and not extended, since it was at best an act of despair, and at worst a crime akin to murder. If any section of the profession were carried away by the wave of criminal sentimentality that was passing over the country, their activities might well be checked by making abortion notifiable.

The Rights of the Mother.

Earl RUSSELL said he did not disagree with the criteria Dr. Fairbairn had laid down, but it did strike him that there was no legal warrant for excusing the felony of abortion on the grounds that the patient's health would be improved by it. The

practice of gynæcologists had been extended to a degree that amounted to relieving their patients from a very inconvenient time, and which seemed unjustified by the existing law. Sir Travers Humphreys had been quite right in saying that there would be no conviction; no jury would find that a doctor had acted unlawfully when he had used his best skill in the interests of the patient. This did show how the doctors were the high priests of modern civilisation and above the law; very often there was no appeal to a legal tribunal from their decision. They had to consider solely the interests of their patients, and in so doing they would apply logically to the question of the removal of a fœtus the same tests and the same degree of consideration as they would to the removal of any other tumour. It seemed to him that there was something beyond the sole interests of the patient that the doctors had to consider. All operations were dangerous; there were some in which the mortality was 50 per cent., and the choice was generally left to the patient. It was essential that the law should be correct and unchallengeable, but the ultimate ethical view was not necessarily that on the statute book of the moment. He took the general ethical view (said to be so shocking) that in a matter of this sort the mother alone should be the arbiter. The child was hers, and she was the person to decide whether the early fœtus was to be disposed of or not. The existing legal enactments came on the statute book on religious grounds, and on those grounds they might be defensible but nobody had any right to impose his own religious views on other people. He took the view that the mother was the master of the situation, and entitled to decide if she preferred the life of the child or her own life, health or convenience. There was an undoubted moral duty on every mother to do her best for her child-to-be and to ensure that it should be as happy and healthy as pre- and ante-natal care could make it. But the State had no abstract ethical right to interfere with the situation.

Prof. LOUISE MCILROY spoke on the ethical aspect of the problem, and agreed with Dr. Fairbairn. The development of the fœtus could not be divided into stages; life began with conception and belonged to the State from conception. Abortion ought to be notified to the State just as live and stillbirths were. She recognised that it was very much easier for the consultant in London to carry out a general ethical programme than for a country practitioner, whose complete ruin might follow a failure to comply with the wishes of an influential patient. Women must learn that they could not go into a doctor's consulting-room as if going to a bargain counter. Abortion was nothing but homicide, though sometimes it might be justifiable homicide. Induction of abortion was a confession of failure. She would like very much to have legal permission to induce abortion in a case of rape; she did not think a woman ought to have to continue with a pregnancy forced on her against her will by an unknown person. A patient returning for a second or third abortion raised a very difficult question. "One patient, one abortion" was the allowance stated, yet the circumstances justifying the first would all be present on the subsequent occasions. Doctors aided and abetted abortionists because they were trying to help the patient. If they could get rid of their pledge of secrecy to the patient and get justice done it would be a great help.

Dr. F. MCCANN remarked on the wave of abortion that had passed over Europe since the war, and the Bills tabled in the Parliaments of Germany, Austria, and Switzerland to legalise it in the first three months of pregnancy. He urged the meeting to take up a strong position on the ethical aspect. Once loopholes were created the whole position fell, and it would be most disastrous to the country not to take a strong line. It could not be too well known that there was life from conception onwards and that there was danger and very great danger in abortion at the most skilful hands. Even simple dilatation of the cervix might cause very serious consequences, and emptying the womb opened channels to infection which might vitiate the results of the best operator. If this were driven home, the number of cases would be limited. There was a great deal of confusion about the legal position. The Royal College of Physicians of London had once taken Counsel's opinion, which had been that abortion was justifiable to save the mother's life. One peculiarity about the law was that, if a woman attempted to procure abortion on herself, it was a crime if she were pregnant and not a crime if she were not. Another was that the punishment was so varied; the death penalty was sometimes pronounced, the judge knowing well that it would not be carried out. The law as it stood must be very difficult to administer.

Mrs. MARIE STOPES, D.Sc., expressed surprise and regret, and protested at Dr. Fairbairn's statement that the movement for constructive birth control tended to produce a slackening of the moral fibre. The ethics of abortion had not yet been touched upon by any speaker in a truly fundamental way; everybody had spoken as if the condition were an exceptional one in which the patient consulted the medical profession and, if they refused abortion, the case was finished. Abortion was attempted and going on to a staggering extent throughout the country by other than practitioners of medicine, in an open and bare-faced way that would astonish the meeting. One speaker had spoken of his three or four cases who had not realised that there was any legal bar to abortion; she had had ten thousand such cases. Over ten thousand persons had written to her asking her to perform abortion and inquiring her fee, as if it were the most natural thing in the world. The open, bare-faced trade in abortifacients was enormous and scandalous and there was no legal redress. She knew women who had used abortifacient pills every month of their lives. This matter was not touched by the medical profession at all. The medical profession refused to perform abortion, and women went to these sharks and the law could not touch them.

Dr. BERESFORD KINGSFORD maintained that the production of an abortion with the consent of the woman wronged no one. He agreed that the woman should be mistress of the situation. The only ground on which the procuring of abortion could be held to be a crime was that it deprived the community of a possible citizen, that the Empire had many enemies and needed more children to speak with the enemy in the gate. In his opinion we were getting more children than we needed; in peace we had many more than we could employ, and the Great War had taught us not to rely on the C.3 population of this island but on the united voluntary efforts of the King's Dominions throughout the world. Contraception was depriving the community of far more citizens than those practitioners who worked up side-streets producing perhaps a hundred abortions; the sale of contraceptive appliances had deprived the country of tens of thousands. Yet books on the subject were on every bookstall, and a great political party was bringing forward instruction in conception control as a plank in its platform. A woman might be subjected to very unfair pressure by a lover or husband, and what he would insist on was that no woman should be forced to undergo the operation without her consent and until she had been informed of the risks involved.

Sir BERNARD SPILSBURY said that the scientific facts could not be regarded as doubtful; the individual was alive from the moment of conception. The fact of birth was a mere incident in his life. The only sanction for destroying one life would be that it would endanger another or very seriously prejudice the health of the mother. Borderline cases must be very difficult to decide on, yet there was the guidance that morally the operation would be murder unless there was some justification in the

life of the mother. He agreed that abortion was exceedingly rife; the cases that came to court represented only a very small proportion of those occurring, and there was no doubt that the proportion was much smaller than it was 20 years ago. Since the war it had increased considerably, and the view of the public had undergone a change.

Prof. A. DONALD said that, as it happened, the legal and medical aspect coincided. He agreed with Dr. Fairbairn that the line must be drawn somewhere, and at the purely medical indications that he had mentioned. If not, he did not see why the profession should not fall into the extreme attitude that it was merely a question for the woman concerned. He had a great admiration for the sex, but in this matter women had no morals whatever; they quite expected the doctor to pass a sound whenever they had not been unwell for two or three days. Many of the abstract difficulties did not arise in real practice. He had induced many abortions, four-fifths of them for hyperemesis, but he had never failed to convince a woman that it was her duty to go on with her pregnancy in the cases where there was no medical indication. The profession still adhered to the line laid down as a tradition for all these years; it would be a great mistake if they once began to depart from it.

Summing-up.

Lord Justice SALTER, summing up the discussion, said that he looked at the question with the eyes of a lawyer, and, viewed in this precise manner, the practical problem appeared to be: What is and what ought to be law in this country with regard to the artificial procuring of abortion? Every doctor desired that the law should be so framed that his duties as a citizen should never conflict with his duties to his profession. Dr. Taylor, in his "Medical Jurisprudence," headed one section "Justifiable Abortion," and this section was still retained in the latest edition. It began by saying that there was no abortion that was justifiable in law. Dr. Taylor's view seemed to be that the term "unlawful use of drugs &c.," was merely a term of abuse, but in his (Lord Salter's) opinion the fact of forbidding unlawful use implied that there was a lawful use. A very difficult case might arise if it were found during the pregnancy that one or other parent were suffering from a disease usually inherited. He thought the mother should have more say than anybody else, but it was going rather far to say that to effect abortion should be lawful in any case where the mother desired it. Here was a living thing alive in the mother, in many senses existent already. Was her right to cease at the moment of birth? Had she not an equal right to kill it after it was born? It was the view of masses of human beings in ancient times that parents had that right. He could not see a logical distinction between the parent's right to abort a fœtus and the right to expose the child. He had been impressed by Prof. McIlroy's phrase that any abortion was homicide. If abortion were ever sanctioned outside the strictly medical area for economic or social reasons, he would have great fears. Even where it was restrained within the medical area, he would fear the growth of a large class of compliant doctors who would be easily persuaded that there were sufficient medical reasons; their presence would be all to the advantage of the rich. Some speakers had boggled at the idea of many abortions by the same doctor on the same woman, but if the operation was morally justified in a given set of circumstances, it was obvious that it was equally justified another time. He was quite sure that those who proposed to extend the sanctions for abortion outside purely medical limits would find themselves up against an enormous body of instinctive but very powerful public opinion. The early Christian Church had found abortion regarded in the Roman world much as social excess was regarded by our immediate ancestors—undesirable, but so common as to call for no great censure. The attitude of the infant Church had been most uncompromising and had never since wavered. That view, deep down in the hearts of people, would rise up and have enormous force if it were ever proposed to extend the liberty of abortion.

A report of the Discussion on the Treatment of Chronic Non-tuberculous Infection of the Lungs at the meeting of the Combined Sections of Medicine, Surgery, and Laryngology of the Royal Society of Medicine will be found on p. 262.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

A MEETING of this Society was held on Jan. 21st, Dr. E. H. SNELL, the President, in the chair. Dr. S. MONCKTON COPEMAN, F.R.S., from the point of view of the Government department, opened a discussion on

EDUCATION OF THE PUBLIC IN THE PREVENTION OF DISEASE.

It had been suggested, he said, that the Ministry of Health ought to give more of a lead to the adoption of new methods of prophylaxis against infectious disease. A government, however, could not usefully take special action in advance of public opinion, and its policy was to provide the minimum of direct propaganda, while doing all it could to encourage public authorities and voluntary agents to so educate the people that new methods would have a chance of succeeding. The Medical Department of the Ministry issued monthly bulletins with abstracts of important foreign literature, and the Publicity Department issued periodical statements to the press. Summaries of knowledge to date were also issued from time to time. Much of this output from the Ministry could be regarded as propaganda of considerable interest and importance. A good instance of the Ministry's efforts to forward the use of beneficial methods was its action in setting out the Schick method of protection against diphtheria. It had responded to numerous requests for assistance from medical officers of health and of public and private schools, and much help had been given by the Wellcome Laboratories. The Schick test, followed by immunisation of susceptible persons, had been carried out on 6000 children and adults, none of whom had since contracted diphtheria, though many had been in contact with cases of it. It was of great importance to immunise all children at pre-school age, so as to avoid the risk of contracting the disease on entering school life, but so far this had been attempted only on a very small scale; pioneer work of this kind had been done by Dr. C. W. Hutt, medical officer of health for Holborn. The Ministry was now considering the question of more direct propaganda by means of local conferences, which would be attended by members of the staff of its medical department. This department should be looked upon as a central bureau of information, engaged in investigating and recording epidemiological, statistical, and laboratory work in this country and abroad concerning the prevention of infectious disease, and supervising the technical work involved in the production of immunity.

The Press.

Lord RIDDELL said that it was evident from Dr. Copeman's remarks that the Government was not disposed to take the initiative in educating the public on these matters, its object being, apparently, to get somebody else to do this educating. He thought that the press as a whole could not be charged with any disinclination to deal with medical matters. If some gigantic scheme of preventive inoculation was contemplated, the Ministry of Health should first formulate its proposals, discussion of which by Parliament would focus public attention on them. No doubt the services of experts would be available to explain the scheme. If medical officers of health supplied the press with interesting copy on vital subjects they could be sure of having what newspaper people called a "double top." The measures involved

in the prevention of infectious disease were serious; they implied complete confidence in the efficacy of certain treatment; they meant an interference with the liberty of the individual; and propaganda in their favour might start an agitation against them. Vaccination against small-pox had been of great benefit to the community, but just because it had been made compulsory and some measure of attention had been drawn to it, much opposition to it had been aroused. What was likely to be the reception of a proposal to inoculate all young children? Was the profession as a whole in favour of such preventive measures? He thought it unlikely that the press would try to form public opinion on this matter, but probably the papers would open their columns to a discussion of the subject, provided it was carried on by persons with due qualifications, and that they did not fix their remuneration at too high a figure.

The Medical Officer of Health.

Dr. C. W. HUTT said that he would favour general immunisation against tuberculosis, enteric, and other diseases. The problem at present centred chiefly around small-pox and diphtheria. He was a firm advocate of personal persuasion in the attempt to gain public sympathy for prophylactic measures. It was encouraging to find Camberwell and Westminster taking up the Schick test for diphtheria. The opposition of the Anti-vaccination League had always to be reckoned with; sometimes the statements issued by that body were grossly wrong. He thought that cinematograph films and wireless could well be brought into the campaign, though admittedly the most powerful agency was the press, especially as, even now, many people felt that if anything appeared in print it must be true.

The Standpoint of the Public.

DEAN INGE, referring to attempts made in the first weeks of the late war to prevent the inoculation of British troops against typhoid, said that in the Boer War there had been between 16,000 and 17,000 deaths from this disease in an army of 200,000. It was not too much to say that if the anti-vaccinist crusade had succeeded in 1914 we should have lost the war. The ignorance of the public remained astounding, though not so bad as 50 years ago. He had only one additional suggestion to make—namely, that the churches should set apart one Sunday in the year—perhaps St. Luke's Day—as Health Sunday. On that day the pulpits might be occupied by medical officers of health. The main responsibility in this matter, however, rested with the doctors themselves. In the past they had been too timid, too afraid of medical etiquette, and of public opinion; they had not shown quite the courage they ought to have done. They certainly had been slow in enlightening the public about the nature of certain contagious diseases which were even more serious than small-pox. And he thought the profession might well tell the public a little about the well-established laws of heredity; that it was not good for epileptics or deaf-mutes to marry. Medical men were listened to very patiently and respectfully. The modern man might doubt whether he had a soul, he might forget that he had a mind, but he was acutely aware that he had a body.

The Point of View of the Laboratory Director.

Prof. J. C. LEDINGHAM, F.R.S., said that the best advertisement which could be given to a product of research was the assurance that it rested on a solid scientific foundation, that it had no secret corners, and that it had been tested as far as possible on animals, or, as in some instances, on human volunteers. It should then commend itself to the public without the need of any special propaganda. But the public must not try to force the researcher's hands. The value of diphtheria antitoxin had been tested up to the hilt before it was used on patients. The story of tuberculin showed how even a great figure-head could go astray. Koch himself had laid down the conditions which specific therapy should fulfil, but not until his third paper did he state what his substance was, feeling, he said, that physicians would be less prejudiced if they did not know. This illustrated the necessity for the investigator to stick to the rules of the game, however distinguished he might be. Public health would benefit, he thought, if measures were taken on suspicion of an attack of disease, without waiting for definite symptoms to develop. In this country we had been slow to adopt prophylactic measures. In his view, the chief need in propaganda was to have an informed public press. At present it served out, from sheer ignorance, what was a mere burlesque of the facts. The burden of the work could well be borne by the various welfare organisations and institutions. After all, vaccination was cheaper than small-pox, and the widespread reduction of incidence following widely used immunisation would be a gain cheaply acquired.

Dr. C. S. THOMSON contended that the working man was very amenable to persuasion in these matters. The general practitioner dare not write an article to the press on health subjects, for fear of having his name removed from the Register. Medical officers had already appeared in the pulpit. He thought that films might also be made and shown.

CHELSEA CLINICAL SOCIETY.

AT a meeting of this Society held on Jan. 8th Dr. J. D. ROLLESTON, Vice-President, opened a discussion on the practical results of

Recent Researches in Acute Infectious Diseases.

The diseases, he said, in which the most useful results had been obtained from recent research were, in order of importance, diphtheria, measles, scarlet fever, and typhus, and these results could be ranged under the headings of diagnosis, prophylaxis, and treatment. As regards diagnosis, the most important discovery in recent years was the Weil-Felix test which occupied as important a position in the diagnosis of typhus fever as the Wassermann reaction in the diagnosis of syphilis. Although the causal agent of scarlet fever was probably a variety of hæmolytic streptococcus and that of measles a green-producing diplococcus, bacteriological methods were not at present available for the clinical diagnosis of these diseases. Personally Dr. Rolleston had not found that recent tests had given him any assistance in the diagnosis of scarlet fever, but he admitted that several observers both at home and abroad were inclined to attach considerable diagnostic significance to the Dick test and Schultz-Charlton reactions. From the practical standpoint the most useful results came under the heading of prophylaxis, especially as regards diphtheria, measles, and scarlet fever in the order named. Dr. Rolleston gave a brief description of the Schick test, active immunisation against diphtheria by toxin-antitoxin, the serum prophylaxis of measles, and immunisation against scarlet fever. In dealing with treatment he remarked that investigation had shown that there were no grounds for regarding alcohol as a cardiac stimulant. The most that could be said for it therapeutically was that it acted as a narcotic and that in adults accustomed to its use it produced a sense of euphoria. In treating children, who formed the great majority of patients suffering from acute infectious diseases, there appeared to be no justification for its use.

The most remarkable result of recent research, continued Dr. Rolleston, was the application of serum therapy to scarlet fever. His own experience had been limited, consisting merely of about 50 cases, for, unlike some enthusiasts, he did not think it necessary to use scarlet fever antitoxin as a routine measure, but reserved it for severe cases. The best results were obtained by the use of a concentrated serum whereby the frequency and severity of serum sickness was reduced to a minimum, while the tendency to faucial ulceration was apparently checked and a striking improvement in the general condition resulted.

Reviews and Notices of Books.

CLINICAL METHODS.

Finlayson's Clinical Manual. Fourth edition. Edited by CARL H. BROWNING, M.D., E. P. CATHCART, M.D., F.R.S., and LEONARD FINDLAY, M.D., D.Sc. Revised and augmented by various contributors. London: G. Bell and Sons, Ltd. 1926. Pp. 815. 18*s*.

Examination of the Patient and Symptomatic Diagnosis. By JOHN WATTS MURRAY, M.D. London: Henry Kimpton. 1926. Pp. 841. 36*s*.

History Taking and Recording. By JAMES A. CORSCADEN, M.D. Associate in Obstetrics and Gynecology, Columbia University, New York. New York: Paul B. Hoeber Inc. 1926. Pp. 78. $1.50.

THE great increase in bacteriological and chemical aids to diagnosis during this century brings with it a grave danger that students may come to regard diagnosis as a mechanical science, losing sight of the fact that more frequently it is a philosophic art. The reissue of Dr. Finlayson's well-known "Clinical Manual for the Study of Medical Cases" after a lapse of 35 years is thus very welcome, the editors have chosen coöperators admirably, and have produced a book which contains much of the spirit of the original. Certain portions, indeed, have been retained almost in their entirety, and the late Sir William Gairdner's contribution on the physiognomy of disease is reproduced in its classical form. The only section which is completely new is that by Dr. E. P. Cathcart on disease of the glands of internal secretion; this is a very well-written, restrained contribution, in excellent keeping with the rest of the book. Laboratory tests are not omitted, but those described are for the most part such as can be carried out in ward side-rooms. On the other hand, since a most important duty of the student is to obtain specimens for examination, emphasis has been laid throughout on the precautions to be observed in furnishing such specimens. The section on examination and reporting of medical cases has been well revised by Dr. Leonard Findlay; a general scheme is followed by a discussion on the various parts of the "history." From the point of view of the student, for whom the book is primarily intended, it is perhaps rather long, but it is very readable and is altogether a worthy product of the Glasgow school.

The 800 large pages of Dr. Murray's book are concerned only with what he describes as an "outline for history taking." In a preliminary section he describes a general scheme for eliciting a "history" and for the examination of the patient, and then goes on to deal in more detail in a second part with diseases of single organs or of systems of the body. He rightly holds that "every first-class diagnosis must be preceded by a thorough history," but a history of such detail and minuteness as Dr. Murray appears to require would seem to be so laborious an undertaking that diagnosis and treatment could hardly be efficiently carried out by the exhausted historian. It is stated that the subject matter is gathered from standard works, but some curious questions are hardly made clearer by the appended notes. For example, in dealing with diseases of the circulatory system, Dr. Murray puts the question, "Does the heart skip a beat at intervals of one-half to one and a half minutes? Is the patient in perfect health?" followed by the explanatory note "Arrhythmia. It may occur in healthy persons." This is surely too vague. Again the patient is asked, with reference to the liver, if he has suffered from diabetes or rickets. The reason for this question is given as "look for atrophic cirrhosis." Questions with explanatory comments form the bulk of the book, and vague or inaccurate ones, though only rare in comparison with the immense number in the volume, do detract somewhat from its value. Illustrations are profuse and those in the section on the ductless glands are an excellent collection.

Dr. Corscaden's little book deals briefly with the art of history taking and recording, and while the volume suffers slightly from the fact that the specialty of the author is given too prominent a place, it is quite a useful production. The discussion of difficult problems in history taking and the devices set out for handling difficult patients are valuable, while the author's differentiation of the two arts—that of eliciting a complete history and that of recording it clearly—will serve to impress the student with the need for taking pains in his work.

PRACTICAL SURGERY OF THE JOSEPH PRICE HOSPITAL. By JAMES WILLIAM KENNEDY, M.D., F.A.C.S., Surgeon to the Joseph Price Hospital, Philadelphia. Philadelphia: F. A. Davis and Co. 1926. Pp. 861. $10.

Dr. Joseph Price was a surgeon of Philadelphia of great personality, who died in 1911. There is no doubt that he was a great teacher, a skilled technician, and a forceful character. Dr. James Kennedy was his assistant for 11 years, and was so impressed with the work of his chief that 15 years later he has felt impelled to write a book extolling Dr. Price's methods on almost every page. For him Joseph Price could do no wrong. Time after time the author declares his master to have written the last word on the particular subject he is discussing. The book is thus full of sentiment, but in spite of this it contains good material. Much of its teaching is provocative, but the obvious sincerity of the author persuades us that, although he may over-rate the virtues of the methods of his late chief, there is nearly always in them a sound basis which may not be disregarded. Like many enthusiasts he ascribes views to his opponents, in this case the "physiological surgeons," which they do not hold, and then sets out to show how wrong these views are. One of his most strongly held tenets is the extraordinary resistance which the inflamed peritoneum offers to manipulation. In acute appendicitis he is a strong upholder of freeing all bowel which has formed adhesions. He believes that this eliminates subsequent obstruction and that it is perfectly safe, for absorption of toxic material by the inflamed peritoneum is reduced to a minimum. He believes that it is safe to break down adhesions, even in tuberculous peritonitis, where careful and systematic separation of all adherent coils of bowel is recommended.

The author is a strenuous advocate of carrying out drainage in the inflamed abdomen by means of a gauze pack, but curiously enough, in the section on treatment of the inflamed gall-bladder, we find that his gauze is surrounded by oil-silk to prevent adhesions from taking place between the duodenum and the gall-bladder. When discussing cervical erosions Dr. Kennedy stresses the extreme importance of this pathological condition, since he believes it to affect strongly the mentality and general comfort of the patient. For a much injured cervix he recommends vaginal hysterectomy.

There are interesting observations scattered through the book. For instance, it is declared that if one ovary has been removed because of cystic disease, the other ovary is very liable to become cystic if the uterus remains, but not if the uterus is removed. In fact, it is said that with the uterus remaining 90 per cent. of such cases return for a second operation on the opposite ovary. Again, on page 460, the author declares that the removal of a tuberculous kidney causes a subsidence of a tuberculous lesion beginning in the other kidney. In the treatment of carcinoma of the breast the author does not advocate removal of the pectoral muscles, since he says that Dr. Price pointed out that this procedure did not add to the thoroughness of the removal of the malignancy nor to the prevention of its recurrence. Such a view, although unorthodox, is worth consideration. In his practice catgut seems never to be used even in septic cases, and neither are gloves. We cannot agree with the contention that gloves hamper the work of the intra-abdominal surgeon. It is a question of training and the development

of sensitiveness of the finger-tips. The book is interesting because it illustrates Mr. G. K. Chesterton's contention that the Americans are a foreign nation; it is valuable because it throws doubt on some well-established methods of the present day.

DISEASES OF THE EAR.

Handbuch der Hals-Nasen-Ohren-Heilkunde. Edited by A. DENKER and O. KAHLER. Vol. VII. *Diseases of the Ear.* Part 2. Berlin: Julius Springer. Munich: J. F. Bergmann, 1926. Pp. 804. R.M.72.

THE seventh volume of Denker and Kahler's great handbook forms the second of the three devoted to diseases of the ear. It deals entirely with pathology and treatment, and is subdivided into sections on the external ear, middle ear, inner ear, tuberculosis, syphilis, and tumours, including a chapter on tumours of the acoustic nerve. This volume, therefore, includes the greater part of the description of ear diseases from the clinical aspect; intracranial complications of ear disease will be discussed in the next volume, together with the subject of deaf-mutism, while methods of examination and testing, as well as general ætiology, have been dealt with in the preceding one. The whole subject of non-suppurative middle-ear deafness, apart from otosclerosis, is discussed by A. Scheibe under the heading of "Diseases of the Eustachian Tube—Closure of the Tube," and occupies but 18 pages, a much less complete account of an important subject than would be expected in a work of this size and scope. As to treatment, the author prefers the Politzer method and rarely employs the Eustachian catheter, the use of which is but very briefly described; treatment with bougies is only mentioned in the statement that the author has no experience of their use. With this exception the work is fully up to the very high standard set by the volumes previously published.

There is a copious index of subject matter and another of authorities; a list of references to literature follows each chapter, and a full paged table of contents is included at the beginning of the book; these features add much to its value as a work of reference.

JOURNALS.

BRITISH JOURNAL OF CHILDREN'S DISEASES. Vol. XXIII. October–December.—In their paper entitled Investigation of a Case of Henoch's Purpura treated by Splenectomy, Dr. Bernard Myers, Dr. A. Knyvett Gordon, and Mr. Rodney Maingot record a case of severe Henoch's purpura in a girl of 6, which had existed for a year. During the last ten months of this period continuous bleeding from the kidneys had undermined her strength and a fatal issue seemed imminent. All medical treatment failed to stop the hæmaturia. Splenectomy, however, was followed by cessation of hæmaturia and improvement in general health. Two months after operation the patient seemed to be a normal child, and there had been no recurrence of hæmaturia. Pathologically the case is remarkable as being the first example of Henoch's purpura on record in which phagocytic giant cells are described. The histological appearances of the excised spleen are illustrated in a coloured plate.—In the second part of their paper on Epiloia, Dr. T. Brushfield and Dr. W. Wyatt deal with the pathology of the disease. They point out that the condition in the brain is one of hypertrophic nodular sclerosis or tuberose sclerosis, which is a congenital lesion characterised by marked hyperplasia of the neuroglia elements which gives rise to tumour-like masses in various parts of the brain. Microscopically the condition is a gliosis in connexion with which peculiar giant cells or ganglion cells are observed.—Dr. Brushfield and Dr. Wyatt also contribute a paper on Microcephalic Children, based on observations at the Fountain Mental Hospital. They state that the diagnosis of true microcephaly rests on three distinguishing and never-varying features: (1) cranial measurements all below normal, (2) fronto-parietal recession with occipital flattening, and (3) dwarfism. Accessory features are (4) early closure of the anterior fontanelle and all sutures, (5) a pointed, ridged vertex, the ridge in marked cases extending down the frontal bone to the glabella, and (6) recession of chin and prominent nose. All grades of mental deficiency occur in association with microcephaly, but most of the writers' cases belonged to the low-grade imbecile and idiot groups. Both the papers are illustrated by excellent photographs showing the naked-eye and microscopical appearances of the brain in epiloia and the characteristic features of microcephalic children.—Dr. E. C. Willcox reports a case of Concurrent Varicella and Herpes Zoster. The patient was a boy aged 4 years, in whom a characteristic eruption of herpes zoster on the left side of the chest was followed, four days later, by a generalised eruption of varicella, the lesions of which were scattered over the trunk, face, and scalp, and were also present on the palate, base of the uvula, and buccal mucous membrane. Both eruptions were extremely characteristic, and both developed and terminated in the manner commonly seen in the two diseases. Comments on the case, with a review of the literature, are appended by Dr. J. D. Rolleston.—The abstracts from current literature are devoted to dermatology and syphilis.

BRITISH JOURNAL OF OPHTHALMOLOGY. December, 1926.—Wajid Ali Khan discusses the Pathogenesis of Microphthalmos, his material being derived from two human and two pig's microphthalmic eyes. He attributes the abnormality not to intra-uterine inflammation, as has been suggested, but to an arrest of normal development. In this connexion he thinks that fright may be an operative cause. One of the cases was that of a child of an unmarried mother, and he suggests that the shock to the nervous system of the mother on first realising her condition about the time when the primary optic vesicles of the fœtus were being formed was the effective cause. The suggestion appears to be somewhat fanciful.—L. G. Dodds records an instance of congenital defect of abduction of one eye associated with retraction of the eyeball in adduction. Jameson Evans, who recorded one of these cases in 1903,[1] favoured the view that the external rectus in these cases is wholly or partially converted into a fibrous band. There may also be a faulty insertion of the muscles. Each case must be investigated separately as the appropriate treatment may not be the same for all.——January, 1927: Crater-like Hole and Coloboma of the Disc associated with Changes at the Macula, by K. T. A. Habertsma, of Delft, Holland. The case (illustrated by a coloured plate and charts) differs from the more ordinary cases of "hole" in the disc, in that the vision of the eye was seriously affected by a large scotoma including the macula. Presumably the "hole" was caused by an absence of the papillomacular fibres. The author suggests an abnormal growth of the retina protruding into this portion of the disc.—Bitemporal Contraction of the Visual Field in Pregnancy, by I. Ambramowicz, of Vilna. The author has reinvestigated this subject, which was brought before the International Congress of Ophthalmology at Washington in 1922, by C. E. Finlay and Maud Carvill, who found that a large proportion of normal women showed the phenomenon in the later months of pregnancy; they attributed it to enlargement of the pituitary gland. Isolated cases have been observed, by J. Herbert Fisher[2] and many others. The conclusion of Ambramowicz, based on the examination of 81 normal women in the last month of pregnancy, is that the phenomenon cannot be demonstrated in more than about 6 per cent. of pregnant women. An excellent account of the relations of the pituitary body to vision is to be found in Prof. de Schweinitz's Bowman lecture published in the Transactions of the Ophthalmological Society for 1923.

[1] Ophthalmic Review, vol. xxii.
[2] Brit. Jour. Ophthal., 1917, i., 599.

THE LANCET.

LONDON: SATURDAY, JANUARY 29, 1927.

ABORTION: LAWFUL AND UNLAWFUL.

RECENT discussions have revealed the uncertainty of the medical profession as to how far the law permits the termination of pregnancies. The legal aspect, said a speaker at the British Medical Association meeting last July, is that induction of abortion is always against the interests of the State; it is a criminal offence, and legislative measures and precautions have been taken to prevent its performance except in cases of medical necessity. That statement is true, but it does not appear upon the face of the Offences Against the Person Act of 1861—the enactment usually employed in prosecuting abortionists. "Whosoever," says Section 58 of that Act, "with intent to procure the miscarriage of any woman, whether she be or be not with child, shall unlawfully administer to her . . . . any poison or other noxious thing, or shall unlawfully use any instrument or other means whatsoever with the like intent, shall be guilty of felony, and, being convicted thereof, shall be liable to be kept in penal servitude for life." Except for the addition "whether she be or be not with child," these words are 90 years old, for the 1861 Act borrowed them from an Act of 1837. Perhaps if they were re-enacted again to-day an express proviso would be inserted to exempt from criminal liability the fully qualified practitioner who terminates a pregnancy for the bona fide purpose of preserving the mother from special danger to life or health. But, as it stands, the law contains no such saving clause; its language is formidable and uncompromising. How comes it, then, that such operations are ever otherwise than criminal? The answer lies in that word "unlawfully," which creates the implication that abortion may be lawful as well as unlawful.

Lawfulness or unlawfulness may ultimately be a question for judge and jury. But no conviction will follow if the practitioner has acted on bona fide medical grounds; and if no conviction is likely no prosecution will be undertaken. As, however, the practitioner has no express statutory exemption from criminal liability, he may be called upon to establish his bona fides; therefore, he is well-advised to remember that, in Lord RIDDELL'S phrase, "secrecy is the badge of fraud," to explain to the woman and her friends the course he proposes to take, and to obtain the confirmation of a second opinion. The statutory provision of 1861 already quoted is not, of course, the whole of the law. The same section makes it felony for a pregnant woman to attempt to procure her own miscarriage, and a succeeding section makes it a misdemeanour for anyone to supply or procure any poison, instrument, or other means, knowing it to be intended for the unlawful procuring of a miscarriage. Quite apart from statutes, to procure the abortion of a quick child is stated by COKE and others to be a misdemeanour at common law; moreover, the law of conspiracy has often been successfully invoked to secure the joint conviction of a woman and her assistants in abortion. There is a further issue where an unlawful attempt to procure miscarriage results in death. At one time the judges regarded this as clear murder, and visited it with the death sentence. Later, the Home Office so frequently commuted the capital sentence, and juries were found so reluctant to convict of this kind of "constructive" murder, that the judges changed their practice. They began to tell juries that they might convict of mere manslaughter unless they thought the accused must have—or ought to have—contemplated that death or grievous bodily harm was likely to result. Here our English law was mitigating its rigours against unlawful abortion, and perhaps unwisely, for the change placed the practised abortionist in a better position than the mere first offender. But that is the limit of legal tenderness. The offence is difficult to prove, for witnesses are seldom present; the law, therefore, has enlarged the evidence admissible. To throw light on the lawfulness or unlawfulness of an operation, to prove the intent with which the noxious thing was administered or the instrument used, the courts have admitted evidence showing that the accused has on previous occasions used similar means with the avowed intent to procure abortion, or that he or she has previously admitted having done the same thing to other women. Such evidence of previous incidents—which normally the judges are alert to exclude—was held admissible in an abortion charge in 1906, because it authorised a reasonable inference of systematic conduct. In 1922 the courts went further. With the subsequent confirmation of the Court of Criminal Appeal, evidence that a doctor administered drugs to one woman with intent to procure abortion was held admissible in support of a charge of having used an instrument upon another woman for the same intent, and vice versa—not to prove thereby that the defendant used the instrument or administered the drug, but to rebut the contention that he did so innocently. In 1909 the evidence of a woman employed as a police spy to entrap the accused (and, therefore, alleged by the defence to have instigated the crime) was accepted, and corroboration was held unnecessary. Punishment is substantial. Lord READING, when Lord Chief Justice in 1916, was asked to reduce a sentence of three years penal servitude upon a convicted abortionist. He refused on the ground that it was an offence for which a severe sentence was the only sentence possible. "The courts must mark their view of these offences which do not become less frequent as time progresses and may not tend to be less frequent in the future." It will be seen that, in Lord RIDDELL'S words, abortion is a risky game. When many of these decisions were given, a fully qualified medical practitioner was standing in the dock.

The member of an honourable profession who, honestly using his best skill and judgment, acts solely in the medical interests of his patient, is in no danger of prosecution or penal servitude. His guiding principle is clear, and if its application is difficult in a particular case, it is the kind of difficulty daily encountered in medical practice; as Earl RUSSELL put it during a recent discussion, the removal of a fœtus is as much a medical question as the removal of a tumour. The practitioner must disregard everything except the medical aspect of the case. He is not to be persuaded by vague and unexamined pleas of feared ill-health, nor to give way to those who would evade the ordinary inconveniences, discomforts, and risks of child-bearing. He is not to degrade his calling or abrogate his judgment by shirking the duty of refusal on the ground that, if he refuses, some other practitioner may be found more pliant. He is not to regard the economic consequences nor—with one possible exception—the social consequences of childbirth; these considerations will afford him no legal defence. The one possible exception

is the case—perhaps more prominent in argument than in actual experience—where a woman is pregnant as the result of a criminal assault forcibly committed upon her against her will. This case is clearly distinguishable from those where an unmarried woman is with child as the result of voluntary intercourse. There is no legal authority for saying that it is lawful to terminate a pregnancy caused by criminal assault, but, if the practitioner is satisfied of the facts, he can operate with the certainty that juries will be slow to convict and judges slow to punish. For the rest he must remember that the procuring of abortion upon insufficient medical grounds is as unlawful now as formerly, though religious inhibitions may seem weaker, and though the frankness of modern speech and thought may suggest a change in the national conscience. The question for him in each case is the physical and mental safety of his patient. The answer in each case rests, therefore, really with the medical, not with the legal, profession.

SMALL-POX OUT OF CONTROL.

THE epidemic of small-pox in the North of England has now reached a stage at which the spread of the disease cannot be controlled. The popular distaste for vaccination is reflected in the attitude of local authorities towards their duties, and in many areas it has become impossible even to ensure that contacts shall be vaccinated or segregated. The result has been a long series of associated outbreaks which have proved expensive and inconvenient. In one place the disease has been dealt with as though it were deadly; in another it has been disregarded because it is so trivial. And at the end of several years it can still be claimed that either of these policies has been justified by events, for it has been shown that small-pox can only be controlled by concerted action, and it has sometimes proved to be hardly worth controlling. If, indeed, we could be certain that the disease will remain mild in character, it would probably be wise to let it run its course unchecked; the public could take its choice between vaccination and a disease no worse than chicken-pox, and in either event would gain immunity. But it is impossible to feel any such certainty. Statements by the medical officer of health for Sheffield and others suggest that it is already becoming more virulent, and the whole policy of the Ministry of Health in demanding that the epidemic should be taken seriously is, of course, based on the possibility of such a change for the worse. Dr. C. V. CHAPIN,[1] having searched without avail for any record in the United States of the derivation of a severe from a mild outbreak, suggests that a sudden change or (speaking in biological terms) mutation of the small-pox germ, occurred in South Africa or Florida 30 years ago. But, even so, who is to say that a mutation in the direction of mildness may not be followed sometime by a mutation in the direction of severity? As Sir HUMPHRY ROLLESTON recently pointed out at the Medical Society of London, outbreaks of mild small-pox in the past have been frequent, and this should warn us against believing that the virus has undergone a permanent change of heart. Mild outbreaks have in the past been succeeded by widespread and virulent epidemics, and the same thing may happen again.

Should such an epidemic occur in this country, as is quite likely, the situation would be serious. Failure to control small-pox in the North of England has brought the policy of universal pseudo-compulsory vaccination of infants into further disrepute, and has given another handle to those societies which make it their business to increase the distaste of the public for this measure. The tenets of these societies are largely academic. They object to vaccination on the ground that it is illogical and unpleasant to inoculate the perfect human body with unclean disease. It is very doubtful, however, whether this is the aspect of vaccination which deters the bulk of the population from having their children protected. More probably it is the idea of possible danger and certain malaise which disturbs the public mind, for it is a mistake to suppose that all the opposition is due to lack of imagination or crankiness. Vaccination at the age of six months inflicts an infectious disease on the child at a time when its digestive mechanism is being rapidly modified, and many reasonable people, although convinced that vaccination will prevent small-pox, think that the advantages of immunity do not outweigh the disadvantages of its production. Such minor qualms would disappear in face of an epidemic, but there is enough sense in the opinion—when supplemented by the nonsense of the antivaccinists—to make universal and full vaccination of infants (as theoretically enforced by Parliament) impracticable in this country at the present time. And there is no settled policy in its stead. All that happens is that when an epidemic of small-pox breaks out the medical officer of health does his best to frighten the public into wholesale vaccination, his success depending partly on his personality and partly on whether the disease itself seems dangerous to the people of the district. This is an unsatisfactory way of meeting small-pox in a civilised community, and it is time that the alternatives were fully discussed.

The first alternative is to let small-pox take its course, offering vaccination to those who prefer it. In view of the likelihood of a virulent epidemic sooner or later occurring, to carry out this proposal would hardly be fair to a semi-educated population. The second alternative is to modify our methods of vaccinating infants, so that sensible people will have no reason to fear and dislike them. This suggestion is discussed by Dr. J. PARLANE KINLOCH in his Report on the Health of Aberdeen for 1926. Although, he says, no evidence has been obtained that ordinary vaccination at six months is harmful to the child's future well-being, any immediate disturbance of health can be obviated if parents can be persuaded to adopt vaccination and re-vaccination, as follows[2]:—

"In the first place, the child when a week old is vaccinated on the arm with the smallest single site insertion compatible with a successful take. Vaccinia developing in this way is extremely mild and causes no discomfort whatsoever to the infant, and no scarring results from this procedure. The immunity from small-pox thus secured is, however, of shorter duration than the immunity provided by the full vaccination procedure at the age of 6 months . . . . and while children thus mildly vaccinated in the first week of life are protected during the pre-school years, revaccination at the school age must be procured if the danger from small-pox is to be avoided. This can be achieved by revaccinating with the smallest single site insertion compatible with a successful take, or if revaccination to the extent laid down in the Vaccination Order is now desired it is of no serious import to the healthy child aged 5 years."

Dr. A. DRURY, however, who edits the Supplement in which this extract appears, takes exception to

[1] Public Health Reports, Washington, Dec. 24th, 1926.

[2] Quoted in the Supplement for Public Vaccinators, contained in the Medical Officer for Jan. 22nd, 1927.

the plan "in the present state of public feeling," and remarks that "the suggestion might be more convincing if supported by the results of extensive experience." It appears, however, that only by modifying the virus or the dosage employed in vaccination are we likely to secure assent for the universal protection of infants, and Dr. KINLOCH'S method, if effective, would so disarm public hostility as to make general vaccination once again practical politics. The next, or third, alternative is to abandon universal vaccination altogether in favour of the effective treatment of contacts in the face of an epidemic. Present experience in Sheffield goes to show that under a sufficient stimulus the majority of people in an infected area will present themselves for protection, whether contacts or not, but it is likely that even if compulsory vaccination of infants were sacrificed, Parliament would still be unwilling to give power to the Ministry of Health to make vaccination compulsory within "an infected area." Criticism might be lessened, however, if such vaccination aimed at conferring only brief and temporary immunity, and it is theoretically possible to check the progress of an epidemic by using an antigen producing symptoms so far negligible that popular prejudice would soon fade away. Nor should it be necessary to give the whole of a threatened population this transient protection. Indeed, if they were forced to receive it during one epidemic, they would have a legitimate grievance when a year or two later the public health authorities demanded that they should be vaccinated again. The measure would be reserved for contacts only. For them, however, it must be compulsory to be effective. It may be that we have not yet achieved sufficient accuracy in vaccine standardisation or in measuring individual response to enable us to estimate either the dose or the probable amount and duration of any immunity which might thus be conferred. These are matters into which the Departmental Committee now sitting is quite competent to inquire.

THE PROBLEM OF INFECTIVE ENDOCARDITIS.

TWO years ago a Research Fund was initiated,[1] in memory of the late Mr. R. L. ST. J. HARMSWORTH, for the investigation of the problem of ulcerative endocarditis, and a Scientific Committee, consisting of Sir THOMAS HORDER, Sir THOMAS LEWIS, Sir COOPER PERRY, and Dr. MERVYN GORDON, was appointed to advise the trustees on the administration of a fund which now exceeds £25,000 in amount. On the advice of this committee grants will be made to individual workers in Great Britain or elsewhere on account of contributions to chemical or other research, and the Trust deed contains a provision to the effect that the whole of the capital remaining at any time may be granted to the author of a contribution which is judged to have finally disposed of the present obscurity overlying our knowledge of infective endocarditis, and to have given the medical profession control over the disease. Although in many respects knowledge of infective endocarditis in its more intimate details lingers somewhat, it is clear that clinical recognition of the condition has been much commoner in recent years that it was at the beginning of the century. At that time it was something of a curiosity, but, as is the case with so many disorders, once attention was directed towards it, evidence was soon obtained that it was of much more frequent occurrence than had been supposed. This is particularly true of the subacute form. Published accounts of the disease indicate a greater frequency in some parts of the world than others, but this needs confirmation. Moreover, clinicians with long experience of cardiac disease have the impression that since the war period there has been a definite increase in the number of cases. Trustworthy evidence on this point is, however, difficult to obtain. Despite the increase and greater dissemination of knowledge of the varied clinical appearances, hospital experience suggests that a diagnosis of the condition is usually made only some considerable time after its inception. The insidious nature of its onset is a partial explanation of this, and the result of it is that little is known of the very early stages of the condition, the time at which the source of the infecting agent might presumably be sought with the greatest hope of success. Much information might be gathered by study of the bacteriology of the blood stream in the course of unexplained febrile conditions occurring in patients suffering from cardiac disease. In earlier times the isolation of organisms from the blood was considered a sine qua non in making a diagnosis. Now it is becoming increasingly clear that in many cases this cannot be done. Considerations of technique do not explain the failures recorded. There are cases in which the clinical diagnosis is unmistakable, in which the post-mortem findings are typical, but which at no time during the period of observation reveal evidence of bacteriæmia. The transition from one stage to the other has been observed in a few instances, but much more information upon this phase of the disease is required. The prognosis is always extremely bad, but evidence is gradually accumulating to show that recoveries do occasionally occur. Specimens are from time to time seen which suggest very strongly that there has been a bacterial infection of the valves at some time or other which has completely healed, leaving a damaged valve. It is quite possible that the cases usually seen are merely a special selection of bad infections. There may be much milder cases which recover without going on to this serious disorder. This is suggested by certain recorded observations, but can only be settled by further work on the bacteriology of the blood in febrile conditions.

The acute fulminating infections are usually due to one of the pyogenic organisms. But the distinction between acute and subacute is in this connexion quite arbitrary, and it would not be surprising to find a case of the latter variety due to one of the more highly pathogenic organisms. A few cases of subacute endocarditis are caused by Pfeiffer's influenza bacillus, but the great majority (90–95 per cent.) are due to streptococci indistinguishable from those found in the normal mouth and upper respiratory tract. Occasionally one is found which appears to have come from the intestine. These streptococci are not hæmolytic, and have very little pathogenic activity for laboratory animals. Further, they are not usually considered to be important agents in human pathology, although some workers dissent strongly from this view. It is probable that they enter the blood stream from some focus in their natural habitat. How often such invasion occurs without injury resulting is entirely unknown. Experimentally, injections of such organisms may be made without ill-effects in many instances, but occasionally lesions of the valves develop. What determines such a localisation is at present a mere matter of conjecture. Clinically and experimentally it is known that previous injury of the valve predisposes to infection, and the same has been proved regarding congenital abnormalities. How this is brought about and if abnormality of structure is a necessary pre-requisite are questions which remain to be determined. It has been suggested that the localisation is due to an elective affinity which the organisms have for the valve tissues; that the tissues are specifically sensitised to the organisms by previous disease or invasion of the blood; that the effect of injury is purely mechanical. None of these contentions can be regarded as adequately substantiated. The precise relation of the disease to acute rheumatism can be settled only when the cause of the latter is definitely decided. The

[1] THE LANCET, 1924, ii., 764.

further interesting feature of the subacute form is the long-continued septicæmia. This has been regarded as due to a failure of the patient's eliminating mechanism. So far as can be judged this view is not correct, for the majority of patients have a markedly increased amount of antibodies, and their blood is quite unsuitable for the growth of the organism. Others believe that the organisms develop enhanced resistance to the destructive agencies at the patient's command. Others again have sought the explanation in the anatomical peculiarities of the lesion which prevent the access of cells to the organisms. These then multiply in the vegetation and escape mechanically into the blood, remaining there, without multiplication, until they are removed and destroyed. It is well-known that though infarction and embolism are common, suppuration is very rare. There is no evidence that treatment on specific lines has any effect on the condition. The same may be said of all other methods.

Infective endocarditis is merely a special case of the localisation of infecting agents. A full understanding of it involves consideration of certain problems peculiar to its anatomical situation, thrombosis and vascular injury, and of others of a more general interest, the nature of bacteriæmia, the mechanism of defence against the streptococci, the classification of the streptococci. The therapeutic problem is that of an inoperable focus of chronic infection rather than that of a pure bacteriæmia. Solution of the problems of infective endocarditis would be a large contribution to pathology, and for its solution search may have to be made in fields far removed from human cardiology, not least perhaps in the realm of comparative pathology. The Secretary of the Research Fund is Dr. P. SEYMOUR PRICE, of 41, Sloane-gardens, London, S.W.1, to whom information should be sent. Scientific workers and clinicians are invited to communicate with him as to lines of research which they think likely to prove helpful.

THE DANGERS OF GASEOUS ANÆSTHETICS.

THE increasing use of chemically active gases as anæsthetic agents should bring home to the administrator the great need of care to avoid the risk of ignition or explosion. Nitrogen is such an inert gas that the impression has got abroad that nitrous oxide is also inert, the practitioner having forgotten his early days in the chemical laboratory when a glowing splinter thrust into a cylinder of this gas broke into flame, much as it would have done in oxygen. For nitrous oxide contains nearly twice the proportion of oxygen in the atmosphere. At the request of the Joint Anæsthetics Committee of the Medical Research Council and the Royal Society of Medicine Prof. H. B. Dixon, F.R.S., has been conducting a series of researches on the burning of gases in nitrous oxide, full details of which have been published in the Proceedings of the Manchester Philosophical and Literary Society (vol. lxxi., Dec. 10th, 1926), and we are happy to print on another page a short account by the author of his results. From this it appears that nitrous oxide is even more active than oxygen itself in supporting the ignition and explosion of such anæsthetic agents as ethylene and propylene. The Committee thinks it advisable to warn anæsthetists and the medical profession generally of this fact, ignorance of which might lead to a serious or even fatal explosion.

INDEX TO "THE LANCET," VOL. II., 1926.

THE Index and Title-page to Vol. II., 1926, which was completed with the issue of Dec. 25th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

Annotations.

"Ne quid nimis."

PSYCHOLOGICAL EXPERIMENT BY WIRELESS.

AN initial difficulty in the collection of data for psychological study is that of obtaining a random and sufficiently large sample of human material. An investigator may have access to groups of people in schools, colleges, factories or offices, but a large sample of the public selected without reference to age, sex, social position, education, or occupation, can rarely be made the subject of the simplest investigation. Prof. T. H. Pear has, therefore, been favoured with an almost unique opportunity in the experiment just conducted by him with the aid of the British Broadcasting Corporation, for the only factors involved in the selection of his material were the opportunity to listen and the will and ability to write a short report. He arranged that nine speakers should in turn read the same passage—a fragment from "Pickwick Papers" was chosen—and the public were invited to listen to the voices thus broadcast and answer a set of questions about the sex, age, birthplace, profession, and accent of each speaker, and to express a judgment as to whether he or she was likely to be capable of leading others. The primary aim was to ascertain whether there is any general accuracy in such conclusions when they are based solely upon the voice, but from the psychological department of Manchester University we may confidently expect other interesting results from the thousands of replies that Prof. Pear has certainly received. Each reporter is asked to state his name, address, and occupation, and on this basis the replies may give information of philological interest, for the detection of the locality indicated by an accent would, we may expect, vary with the locality of the listeners. To some Londoners, as a negative example, the accent imparted to the words of Sam Weller suggested that one speaker was a stranger to the dialect of London, and the positive diagnosis of a specific accent might come with especial frequency from the district where it prevails. Besides the direct aim of estimating the validity of judgments based upon the qualities of a voice, we may expect other results to emerge from the statistical examinations of the sex, address, and occupation of the reporters. What people show interest in this experiment? Is occupation or station in life correlated with accuracy of judgment? Do men or women make the wildest shots? Perhaps these questions may not be answered, but if the statistical machinery of Manchester University is capable of dealing effectively with the material obtained, we hope to see other interesting results from a mass experiment that would have been impossible before the general use of wireless.

THE MENSTRUAL TEMPERATURE CYCLE.

VARIATIONS in body temperature dependent on critical periods in females, and especially on menstruation, associated with organic disease and particularly with tuberculosis have been dealt with by various observers. In more recent years changes in the endocrine glands have been shown as possible sources of disturbance of thermogenesis, and menstruation, or as it is better called, the ovular cycle, has begun to be considered, independently of any other pathological condition, as the determining cause of excessive thermic variations. Excluding all those cases in which hyperthermia could be referred to pathological conditions in some organ or system, the number of clinical observations on subjects showing, during the premenstruum, a temperature above normal have been very limited. Dr. G. Avezzu, of the University of Padua, has published[1] two interesting cases which bear on the subject of the

[1] Il Policlinico, Medical Section, Dec. 1st, 1926.

influence of neuroglandular dystonia in producing certain changes in the body temperature during the premenstrual period. Having eliminated the possibility of a febrile condition imputable to some form of organic disease in the pelvis or elsewhere, and especially early or latent bacillosis, there remain to be considered other ætiological factors and precisely the secretory functionality of one or more endocrine glands and the disequilibrium between the two antagonistic systems of vegetative life. This is, moreover, what has been done by other authors who, occupied with the same argument, and meeting with symptoms of hypersympathismus and manifestations, more or less clear, of increased endocrine functionality, especially thyroid, have described a sympathetic fever, or fever associated with hyperthyroidism. The observations of A. P. Cawadias and Mme. Hovelacque may be mentioned in this respect. The charts of Dr. Avezzu's two cases show a premenstrual rise of temperature of two kinds: (1) the monothermic type, the daily oscillations never reaching 0·5 of a degree centigrade; and (2) inverted distribution—i.e., the axillary temperature being higher than the oral. The former is never met with in any of the great varieties of fevers due to the direct action of a definite microbe or of its pyretogenous toxins. The latter anomaly has been noted by Lucatello in a particular group of subjects with thyroid disturbance of the hypersecretory type, the external axillary figure being greater than the internal oral by two- or three-tenths of a degree centigrade. In both the cases described, Marañon's sign—friction of the prethyroid region causing erythema—Bram's test, tolerance to quinine, Goetsch's test, injection of adrenalin causing lowering of the diastolic with increase of the systolic blood pressure, and Porak's test, bradycardia, and glycosuria after injection of pituitrin, all these were reacted to in a strongly positive manner. To explain the pathogenesis of the increased premenstrual temperature, attention must be drawn to the functionality of the sanguineous glands during the cycle of maturation of the ovary—i.e., that there is a displacement of glandular equilibrium such as to cause in every premenstruum physiological phenomena of hyperluteinism and of hyperthyroidism which are substituted for diametrically opposite conditions during the menstrual phase and the first few following days. Most physiologists admit that the Graafian follicle ruptures about 12 days after menstruation, and the corpus luteum reaches complete secretory functionality on the seventeenth day, but continuing to increase up to one or two days from the sanguineous flow, at which period its involution begins which is completed eight days after the menstrual period. In the case of pregnancy the corpus luteum remains active for a long time and its secretory activity fades only about the third month. The hyperthermia therefore, whether premenstrual or gravid, follows on parallel lines the evolution of the corpus luteum and seems to be closely connected with it.

THE DIETARY VALUE OF THE SOY BEAN.

FOR the last 2000 years the soy bean has been used in North China for making bean curd, a thick nutritious jelly eaten daily by all classes of the people. A vegetable oil is also expressed from it and is widely employed, the refuse serving for cattle-food and manure for sugar plantations. About 100 years ago the bean was introduced into England, but no attempt was made to cultivate it and it is only during the present century that its remarkable merits have aroused interest. English firms have taken a large part in its export from Manchuria and as long ago as 1911 the amount exported rose to about half a million tons annually. In 1910 experiments were begun which demonstrated that the soy bean could be grown throughout South Africa and its cultivation there was strongly advocated.[1] It was shown that besides being useful for animals, it could form the basis of substitutes for flour, meat, chocolate, macaroni, cheese, and coffee, and a few years later much interest was aroused in this country by an attempt to exploit a soy bean product as "synthetic milk."[2] That from the standpoint of nutrition this attempt was not unjustified is evident from the descriptions and analyses of the bean which we have from time to time published, but it has been found difficult to popularise its use owing to the disagreeable digestive disturbance to which it may give rise. Even under the stress of the late war its general adoption was found impossible in Germany. In an article which we publish on page 267 Prof. T. R. Parsons shows that a new phase has been entered upon, owing to the discovery by Dr. Berczeller in Vienna that the obnoxious constituents of soy bean can be removed by special milling and fractional distillation without interfering with the high nutritional value of the resulting meal. Prof. Parsons bases on these facts a well-considered appeal for an investigation on a large scale, hazarding the opinion that Haberlandt's prescience may yet be realised and the soy bean come to be extensively utilised in the diet of the masses to supply the proteins and fats needed in supplement of the abundant carbohydrate which they obtain from the potato. His facts and figures should certainly receive the attention of all who are interested in the feeding of men or animals.

[1] THE LANCET, 1916, i., 168.

MOVING RADIOGRAMS.

APART from its use for purposes of demonstration, it has long been evident that the cinematograph might be of much value for research if continuous pictures illustrating the passage of opaque meals could be obtained. Many technical difficulties have stood in the way; direct pictures could not be taken, as the size of the ordinary X ray shadow would necessitate the use of enormous films; the employment of an indirect method, in which ordinary photographs are taken of the image seen on a fluorescent screen presents other difficulties, such as protection of the patient and camera and the securing of a sufficiently bright image. For nearly six years Dr. Russell J. Reynolds has been grappling with these and a score of equally awkward technical difficulties, which he described in full in a communication to the Rontgen Society on Jan. 11th. We are glad to note that he is now able to secure satisfactory moving pictures of the bony parts, although his apparatus is not yet sufficiently perfected to enable him, we gather, to get serial views of the viscera in action. When we consider the advance that has followed the study of the kinetics of the heart as revealed, however imperfectly, by the electrocardiogram, and the change in thought that has occurred since recognition of the fact that the dissecting-room gave an illusory picture of the anatomy of the alimentary canal, it seems clear that if, as the result of Dr. Reynolds's researches, we become able to get clear moving pictures of these viscera, great advances in medical physiology and clinical medicine may result. Phenomena such as the mass peristalsis of the colon, or the mechanics of the duodenal cap call for considerable elucidation. Applied pharmacology may reveal the secrets hidden to-day under the names of vagotonia and sympatheticotonia. Experiments have already been made to study the intimate movements of the heart by means of the slow-motion cinematograph, but these and other inquiries are held up by the relatively immense costs. We say relatively immense, for it is true that such sums are trivial in comparison with those expended by modern "photo play" producers when seeking some realistic reconstruction of the Tower of Babel or the Burning of Moscow. It seems reasonable to hope that in the near future some hero or heroine of the "movies" may divert a portion

[2] THE LANCET, 1912, ii., 1095.

of his or her colossal earnings from entertainment to inquiry—may we say, from therapeutics to research.

A CASE OF RAT-BITE FEVER.

Miss G. M. Herzfeld and Dr. T. J. Mackie [1] have recently described a case of rat-bite fever in a child, 5 years old, who had been bitten on the forehead by a rat a month before admission to hospital. Fourteen days after the bite was inflicted the healed wound became inflamed and the cervical glands swollen, but the symptoms subsided under treatment, and the child seemed well until two days before admission, when the forehead became swollen again and the temperature rose to 102° F. Four relapses occurred in hospital. Finally, the gradually enlarging cervical glands were excised, and the child was treated with salvarsan and recovered rapidly. The interest of the case—apart from the rarity of the disease in this country—lies in the difficulty which was experienced in demonstrating the presence of the causal organism of rat-bite fever, *Spirochæta morsus muris* or (as has been suggested) *Spirillum minus*. The blood during a febrile attack, fluid from the inflamed area around the bite, and the urine were all examined directly by culture and by animal inoculation, without showing the presence of the spirillum. It was not until the excised glands were searched that the spiral organisms were found, both in direct films from the glands, stained by Leishman's method, and in the blood of guinea-pigs inoculated with the substance of the gland. From the blood cultures made during fever a motile bacillus was isolated, growing abundantly on ordinary media under aerobic conditions and corresponding to *Bacillus fæcalis alkaligenes*. This organism, when tested against the patient's serum, was agglutinated in a serum dilution of 1 in 320; five days later the titre had risen to 1 in 1280, which indicates that the bacillus was responsible for a definite hæmic infection. This organism was a secondary invader, but owing to the difficulty of demonstrating the spirillum, the true extent of the disease might easily have been overlooked, in which case the bacillus might have been regarded as the causal organism.

PERFUMES AND SCENTS.

SMELL, being one of the earliest evolved of our senses, is connected with some of the deepest of human instincts, and perfumery is one of the most ancient of arts. It probably had its origin in the discovery by primitive man that the twigs of certain shrubs or trees imparted an agreeable smell to the smoke of the cave fire, and scents are associated with every religious system of which we have any knowledge. To make a present of perfumes was among Eastern people an expression of profound respect. The Magi presented the Holy Child with frankincense and myrrh; incense burns in the temples of every faith, and kings are anointed with fragrant oil. Anyone who takes an interest in the subject will find a valuable guide in "Fragrant Flowers," [2] recently published by an authority on herbs. This study is chiefly concerned with the plants and processes used in the present-day manufacture of perfumes, but incidentally it contains some data about the use of perfumery in medicine. The antiseptic value of essential oils has been determined in the laboratory by exact experiment, but long before this was done physicians had a profound faith in the medicinal value of strong scents. The priests of ancient Greece chewed bay leaves to induce prophecy, and recommended their use in pillows as a hypnotic measure. The strong odour of these leaves was also supposed to protect against infection, and in times of plague the refugees from the country round Rome would congregate in Laurentium, named for its abundance of laurel bushes. The action of sunshine on cherry, laurel, clove, fennel, and other aromatic plants is now known to release ozone, and thus an early superstition, like so many others, has the support of recent exact knowledge. John Evelyn put forward a scheme which entitles him to rank as a pioneer of the garden city movement. He suggested that all low ground near London should be planted out with pinks, lilies, thyme, and other scented plants, intersected by hedges of sweet briar, rosemary, and the like. He was a believer in the purifying power of plant odours, and knew nothing about carbon dioxide or ozone, but all authorities on public health to-day agree that parks and gardens are vitally important to the welfare of large towns. Mrs. Grieve quotes the statement of Ungerer, a leading perfume manufacturer of the last century, that tuberculosis was rare in the flower-growing districts of Southern France, and that workers in perfume laboratories were singularly free from respiratory infections. She claims the greatest antiseptic power for thyme and origanum, followed by verbena, cassia, and cinnamon. Everyone who has visited the Wellcome Historical Medical Museum knows the pomander-sticks carried by physicians of olden times to protect them from infection. The pomander of Tudor times was a little ball of perfumed paste, made with aromatic gums pounded with rose water and blended with wax or apple pulp (whence the name). It was originally carried as a prophylactic against infectious disease, but later became a luxury, and gave the jewellers of the period a medium on which to exercise their ingenuity and skill in the construction of pomander boxes. Vinaigrettes, a similar invention, gave more wholesome scents than the sachets of synthetic perfume that have superseded them. Apart from their antiseptic qualities, scents have well-defined effects on the nervous system, as everyone realises who carries the right flowers to a sick-bed or sprays eau-de-cologne on the pillow of an invalid, and there may be room for useful research on these lines.

THE TREND OF HEALTH EDUCATION IN GERMANY.

IN ancient times the practice of hygiene was inculcated by its propaganda in the form of religious commands, it was part of the life of the people; at the present day, in spite of our greater knowledge, hygiene is not a living educational force among the masses of the people. For this probably the sanitarians of last century were responsible; hygienic problems were looked at too much from the physico-chemical standpoint, and sufficient attention was not paid to the fact that man is a living organism. No hygienist 20 years ago would have anticipated the scientific interest taken to-day in physical exercise and in bathing in light, air, and water. The contrast between the importance attached to various health measures in 30 years is well brought out in the historical introduction to an article contributed by Dr. Martin Vogel, the Scientific Director of the Dresden Hygiene Museum to a manual of social hygiene [1] recently published in Germany. He compares the first German Hygiene Exhibition held in Berlin in 1882–83 with the 1911 International Hygiene Exhibition at Dresden. At Berlin defence against disease was considered entirely from the point of view of disinfection; school hygiene was chiefly concerned with the form of the school desk; there was no material for the instruction of the public in health. Thirty years later in Dresden the exhibition was centred round the building dealing with "der Mensch"; new ways especially thought out for the purpose were used to try to bring home to the man in the street the wonders of the human body and to place before him the discoveries of scientific hygiene. Dr. Vogel holds out that it is not enough to merely give people health rules, for instance, how they should cough; hygiene should be more

[1] Edinburgh Medical Journal, October, 1926.

[2] Mrs. M. Grieve, F.R.H.S., and Miss Ella Oswald, F.R.H.S., Chalfont St. Peter. 2s.

[1] Handbuch der Sozialen Hygiene und Gesundheitsfürsorge. Edited by A. Gottstein, A. Schlossman, and L. Teleky. Vol. I.: Grundlagen und Methoden. Berlin: Julius Springer. 1925. Pp. 511. M.30.

than a mere collection of useful pieces of knowledge, it should rank as an educational influence and become an integral part of a man's life. Only when hygiene and ethics go hand in hand can success be achieved; the hardening of the body and its exercise require fortitude and self control; abstinence from alcohol, tobacco, and similar amenities imply a strong sense of responsibility. Dr. Vogel makes interesting suggestions as to the part that the clergy should play in the inculcation of hygiene; he considers the close connexion between health and morality to be adequate reason for demanding their intervention in such important problems as the diminution of the birth-rate, abortion, and in the struggle against infectious and venereal disease and alcoholism. Anyone who sets out to teach must set a good example; the fact that 10 per cent. of the Evangelical clergy are organised abstainers is, in his view, more valuable to the cause of abstinence than many of the lectures delivered on the subject. Dr. Vogel deals with hygienic teaching in schools and holds that the syllabus of the teacher should include anatomy and physiology as well as hygiene, stress being laid on knowledge of function rather than structure.

"Parents' days" (Elternabende) give the school doctor and teacher an opportunity of instructing the parents in the care of their children. Adult instruction in health matters is dealt with even more fully. The lecturer should arrange for the audience to be composed of people with common interests, in the same rank of life, with the same standard of education and intelligence. Dogmatism is not essential; no harm comes from confessing the limitations of our knowledge so long as the lecturer himself is quite clear as to what is established and what speculative. The lecture should be a compact whole, not a collection of unrelated fact; it should be personal and concrete; to avoid superficiality the scope of the lecture should not be extensive. Pictures are helpful, but should be carefully chosen and easily followed. Dr. Vogel warns lecturers against showing too many slides at a lecture; 40–50 are enough for any audience, 12–20 suffice for children. Only a few slides difficult to understand, such as statistical slides, should be included. He does not approve of a prepared lecture being read out to explain the slides; the explanation of the slides themselves should constitute the lecture, although care should be taken to introduce personal touches; the Dresden Hygiene Museum has prepared discourses on these lines to accompany the sets of slides. He has not much use for hygiene films, the dramatic representation often takes place in other spheres of life to that in which the audience lives. He instances films on mothercraft which show nurses in well-equipped institutions using a water spray to rinse out feeding bottles, the mother thinking of her humble appliances at home at once decides that proper rinsing of feeding bottles is beyond her capacity. Moreover, the scenes pass so quickly that only persons of sharp intelligence can grasp the lesson it is intended to convey. A form of propaganda referred to is the Health Calendar, not, so far as we know, used in this country. Social hygiene must be explained by examples taken from life, or by preparations, drawings, or models. At the beginning of this century very little suitable material was available in Germany, but the Dresden Hygiene Museum has done much to fill the gap. By imparting life and plasticity to anatomical and pathological presentations it has taken away their frightfulness; by emphasising the important, it has done away with the dangers of schematization; by care in fixing the size of the pictures, choosing carefully colours and backgrounds and the character and arrangement of type, placards have been made attractive as well as arresting. Lingner, the founder of the Museum, paid especial attention to the representation of statistical facts in graphic form; here representations of human figures and articles of different sizes can be made to play a useful part. Dr. Vogel notes with pain that the usefulness of museums and exhibitions is limited by the difficulty of getting enough people to visit them. A separate division of propaganda must thus be set up for their advertisement.

Dr. Vogel thus gives a good outline of the progress of health teaching in Germany, including many hints which will be useful to those in other lands. The problems of all modern civilised States are much alike, and we may note in passing the inter-urban rivalries. An excellent bibliography of the whole of the subject is given by Dr. Vogel; its comprehensiveness emphasises the omission of all reference to the Volkshygienisches Museum at Cologne and its Director, Dr. Czaplewski.

ACUTE THYROIDITIS.

Dr. H. M. Clute and Dr. L. W. Smith[1], of the Lahey Clinic and Pathological Department of the Harvard Medical School, give the following statistics to illustrate the extraordinary rarity of acute thyroiditis as compared with acute suppurative inflammatory processes of other glands. Hagenbach found only 43 cases among 45,953 medical and surgical admissions to the Basle Clinic during a period of ten years. In a recent series of nearly 1200 cases of thyroid disease in the Lahey Clinic there was only one case of frank suppurative pyogenic thyroiditis, one of tuberculous thyroiditis, and five of chronic inflammatory strumitis of the Riedel type. In no case seen during 1925 was a clinical diagnosis of acute thyroiditis made, and before that date the writers had seen only four patients in whom this diagnosis was established. Only three out of over 3000 thyroid operations in the Lahey Clinic had been done for thyroiditis with abscess formation. The rarity of the condition is explained, first, by the thyroid being well encapsulated and not communicating with the pharynx, except when the thyroglossal duct persists; secondly, by its unusually rich lymphatic system, which facilitates free drainage of the gland; and thirdly, by the bactericidal action of the thyroid secretion. Although acute thyroiditis may occur in children secondary to various acute infections, it is most frequent in young adults, probably owing to the changes in the physiology of the thyroid gland which accompany active sexual life. Infection in the upper or lower respiratory tract such as Vincent's angina, influenza, or pleurisy frequently precedes the onset of acute thyroiditis. Cases have been reported as developing during typhoid or paratyphoid infections, but such an occurrence is very uncommon. The onset is usually acute and marked by fever, chills, and pain in the throat and neck. Difficulty in breathing occurs early and increases rapidly if an abscess forms. A hacking cough and a sense of fullness in the neck is present. The voice may be hoarse, but complete aphonia is unusual. Dysphagia is frequently present, especially in association with suppuration. Symptoms of hyperthyroidism may develop. The physical signs are characteristic. Though swelling is not prominent, unilateral or diffuse enlargement of the thyroid can often be detected. The disease runs a benign course, usually lasting six to ten days. Abscess formation is very rare in simple thyroiditis, but may occur in from 60 to 70 per cent. of goitrous cases. Other complications are œdema of the larynx, broncho-pneumonia, and chondritis and perichondritis of the larynx. Exophthalmic goitre may develop and subside with the thyroiditis or persist after the acute symptoms have disappeared. Acute thyroiditis must be distinguished from hæmorrhage into a thyroid adenoma, which follows exertion, cellulitis of the neck, or isolated perichondritis of the trachea or thyroid cartilages. In the absence of abscess formation the prognosis of acute thyroiditis is excellent. Healing occurs rapidly and completely and recurrences are rare. The treatment is symptomatic. On the occurrence of suppuration early incision and drainage under gas-oxygen anæsthesia are indicated.

[1] Surgery, Gynecology, and Obstetrics, January, 1927.

TROPICAL MEDICINE IN THE FAR EAST.

IF a bulky volume be any index of a successful meeting, then the Sixth Congress of the Far Eastern Association of Tropical Medicine must have transcended all its predecessors. In the 1197 pages of its transactions[1] is contained a variety of pabulum to suit the most catholic of tastes. There are no less than 149 original contributions, and the subjects range from tatooing and dentistry to elaborate biochemical and metabolic studies. The Congress was inaugurated with an eloquent address by the Prime Minister of Japan, Viscount Takaaki Kato, followed by Prof. Shibasaburo Kitasato, whose name is familiar throughout the medical world. Appropriately enough, the subject of beriberi and nutritional diseases occupy quite one quarter of the volume, and it is a matter of very considerable ecological interest that undoubted pellagra has been recorded in Japan by Dr. Minoru Itoh. There are many papers of helminthological interest, such as studies on clonorchis infection, on the lung-fluke (paragonimus), by H. Kobayashi; hookworm infestation among Japanese immigrants and residents, the pathology of *Schistosomum spindale*, by Dr. N. H. Fairley and Lieut-Col. F. P. Mackie; and a differential table of 17 species of schistosomes, by B. Tanabe, which affords, for the first time, an accurate synopsis of the subject. Anthropology has not been neglected, for there are studies of the racial indices and characteristics of the aboriginal Ainu and other folk from Saghalien and China. The great majority of the contributions are written in English or German languages, though there are a few from Indochina in French. The secretaries of this meeting, Dr. S. Hata and Dr. Y. Miyagawa, are to be congratulated on the efficient manner in which they have completed their unenviable task in collecting this heterogeneous matter into one volume, the printing and binding of which leave nothing to be desired.

THE GENESIS OF GASTRIC PAIN.

THE common association between gastric and duodenal ulcer and high concentrations of hydrochloric acid in the stomach is too well-known to require comment, but the actual part played by the acid in the genesis of gastric pain is not yet fully understood. On the one hand, the word hyperchlorhydria reminds us that to a great many physicians some excess of acid in the stomach may by itself be the explanation of unusual symptoms; on the other hand, the work of A. F. Hurst and others, and of Izod Bennett and others, teaches us that not only does the introduction of strong acid into the normal stomach not induce pain, but that when a large number of normal stomachs are examined cases are not infrequently encountered in which the normal acidity is fully as high as that met with in disease. The subject of the mechanism of pain in gastric and in duodenal ulcer has recently been further investigated by Dr. W. L. Palmer,[2] who has introduced acids and other chemical irritants into the stomachs of patients suffering from peptic ulceration. With normal men he found that the introduction of 0·5 per cent. hydrochloric acid solution caused either no sensation at all, or at most one of slight epigastric burning. In patients suffering from gastric or duodenal ulcer, on the other hand, such injections led to the immediate occurrence of pain which the subjects described as indistinguishable from their normal pains. The fluids used for such injections were of interesting variety. Sometimes the patient's own acid stomach contents were removed, their reinjection subsequently producing typical pain; in other cases solutions of hydrochloric or sulphuric acid were employed with similar effects. Sodium hydroxide in tenth-normal solution produced similar pain, the symptoms in both acid and alkali experiments disappearing when the stomach had by secretion or regurgitation reduced the strength of the exciting chemical to something approaching normality. Some of the patients were seen at periods when they were without symptoms, and it was found that in these circumstances the introduction of acid provided no sensory response. In general, Dr. Palmer concludes that the gastric acid acts as a true chemical irritant to the pain-producing mechanism, the variable factors on which the production of pain depends being (1) the sensitiveness of the pain-producing mechanism, (2) the concentration of the acid, (3) the amount of acid used, (4) time, (5) the rate of emptying of the stomach, and (6) the rate and amount of duodenal regurgitation. These experiments seem to produce confirmatory evidence in favour of the view that, whilst the gastric hydrochloric acid is normally responsible for the excitation of pain in gastric ulcer, it is necessary for an ulcer or other pain-producing factor to be present before this symptom can be aroused. The term hyperchlorhydria is, in short, misleading, and should disappear from diagnostic nomenclature. In this connexion it is interesting to note Prof. M. T. Finney's statement in the discussion reported on page 228 that the action of gastric juice does not prevent the rapid healing of artificially produced defects so long as there is no interference with the blood-supply.

[1] Far Eastern Association of Tropical Medicine, Transactions of the Sixth Congress, Tokyo. Kyorinsha Medical Publishing Co. 1925. Vol. I. Pp. 1197.
[2] Arch. Int. Med., 1926, xxxviii., 694.

ANTI-VIPER SERUM.

THE serum treatment of snakebite is now well established in India, South America, and other countries where deadly snakes are common, but although there are a fair number of casualties every year from the bites of vipers in Europe, little has been done to provide an efficient seral antidote. The demand for it may be small, inasmuch as only a small proportion of viper bites are fatal, but the great hindrance to its production lies in the fact that, vipers being much smaller than cobras and rattlesnakes, it is difficult to obtain sufficient venom for practical purposes. Colonel M. L. Crimmins[1] states that it takes as many as 200 rattlers to give 60 c.cm. of venom. The only European source of anti-viper serum at present is Prof. Calmette's laboratory at the Pasteur Institute, where the poison used is that of *Vipera aspis;* but Prof. R. Kraus, of Vienna, has recently demonstrated that the antidote need not be rigidly specific.[2] He has experimented with two other sera besides that of Calmette; one prepared from the blood of animals inoculated with the poison of *Lachesis jararaca*, and another taken from blood rendered immune to the mixed poison of several South American vipers. He found that the first of these would not only neutralise the poison of *Vipera aspis* when mixed with it, but was as effective as Calmette's serum when injected separately into an inoculated animal. He points out, however, that this serum contains two separate antitoxins, which have similar properties in vitro but not in vivo—a discrepancy which has been already remarked on by workers on antidiphtheric and antidysenteric sera. The antilachesis preparation would neutralise a dose (0·03 mg.) of aspis poison sufficient to kill a normal guinea-pig in 1–3 hours, and should therefore, Prof. Kraus considers, be effective on human subjects suffering from the bites of European vipers. The second preparation, which has the formidable name of "Vital Brazil polyvalent anti-Bothrops," proved as efficient as Calmette's serum, 1 c.cm. saving guinea-pigs after a dose of 0·025 mg. of aspis poison, and 3 c.cm. after a dose of 0·05 mg.—a control animal dying in one hour from the effects of 0·025 mg. While Prof. Kraus's experiments thus indicate a second existing source of efficient anti-viper serum, it would be inconvenient for clinicians to rely on a South American remedy, and it is to be hoped that further experiments will be made nearer home. It might, for instance, be possible to manu-

[1] Jour. Amer. Med. Assoc., Nov. 13th, 1926.
[2] Wiener Klin. Woch., 1926, lii., 1514.

facture a serum in Europe from the poison of African vipers, which are probably easier to obtain in large quantities than the European reptile.

STRANGEWAYS MEMORIAL.

A MEETING will be held at the Royal Society of Medicine on Wednesday, Feb. 2nd, at 5 P.M., in support of an appeal arising out of the premature death of Dr. T. S. P. Strangeways, which was recently recorded in THE LANCET. Dr. Strangeways left a widow and seven children, the five youngest of whom are still being educated, and all the circumstances will elicit the deep sympathy not only of his colleagues and workers along his special lines, but through the whole medical profession. It is known to many that any part of his income which was not required for household expenses was habitually used by him to assist the Research Hospital at Cambridge; he could never divorce personal needs from those of the work he was passionately engaged upon. The immediate position of the family has been met by subscriptions from friends in Cambridge, but a large sum will be required to complete the education of his sons, the eldest of whom is in his second year at Trinity Hall. During the last 30 years a very large number of medical men graduating at Cambridge have been taught by Strangeways the essentials of pathology, and these men in particular may feel that this is an opportunity of expressing their appreciation of his work; but the additions to medical knowledge made by him, as well as his self-effacing enthusiasm, give the family a claim upon all medical men. The appeal is now open and cheques should be drawn to Lloyd's Bank, Cambridge, and crossed "c/a Strangeways Memorial Fund." They may be sent to Mr. G. F. C. Gill, manager of the bank, who has kindly consented to take charge of the account, or to Sir Humphry Rolleston, Southfield, Cambridge, to Prof. H. R. Dean, Dr. M. Donaldson, Dr. G. P. Bidder, Dr. L. E. Shore, or Dr. Cobbett. We hope that the meeting at the Royal Society of Medicine on Wednesday next will be fully attended by those who sympathise with an appeal that is alike urgent and well justified.

Sir Ernest Hodder-Williams's condition indicates that during the past week he has made satisfactory progress.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdrs. J. C. Bringan and G. B. Scott are placed on the Retd. List with the rank of Surg. Capt.

Surg. Lt.-Comdr. H. C. A. Tandy-Cannon is placed on the Emergency List.

Surg. Lt. (D) E. G. Adams to be Surg. Lt.-Comdr. (D).

T. Prentice, P. H. Deeny, C. R. Boland, and G. Rorison to be Surg. Lts.

ROYAL ARMY MEDICAL CORPS.

Capts. W. C. Hartgill, J. H. Baird (Prov.), and F. Harris (Prov.) to be Majs.

ARMY DENTAL CORPS.

Maj. J. G. Worsley (Temp. Sqdn. Leader, R.A.F.) retires.

Temp. Capt. W. A. Cowden, Dental Surg., Gen. List, to be Capt.

TERRITORIAL ARMY.

Lt.-Col. J. W. Kemp to be Bt. Col.

2nd Lt. W. L. Kinnear, late 4th/5th Bn. Black Watch, to be Lt.

Capts. R. D. Cran and R. A. Lennie to be Majs.

Lt. J. F. Fraser, from the Gen. List, T.A., to be Lt. with precedence and to be supern. for serv. with the Med. Unit, Aberdeen Univ. Contgt. Sen. Div., O.T.C.

R. A. M. Scott to be Lt.

ROYAL AIR FORCE.

The undermentioned are granted short service commissions as Flying Officers, for three years on the active list: J. E. Foran and M. O'Regan.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCVIII.—TREATMENT OF UNUNITED FRACTURES.

I. GENERAL PRINCIPLES.*

IN recent years much light has been thrown on the processes of bone repair both by animal experiment and also by practical experience with the mass of bone injuries and ununited fractures left in the wake of the Great War. Now, too, the increasing frequency of street accidents makes the subject of the treatment of ununited fractures one of growing importance.

As in many other branches of surgery, the most effective and desirable form of treatment is preventive. Moreover, the treatment of each individual case is so much guided by the factors causing the non-union that it is necessary to survey briefly the common causes of the condition before discussing the relative values of different methods of treatment.

Before proceeding to the operative treatment of a case of ununited fracture, it is important to diagnose the cause of the non-union, since, if this is not merely a mechanical one which can be eliminated at the operation, the same factors will continue to act and will almost certainly mar the final result.

Causes of Failure to Unite.

General causes of non-union include conditions which lower the bodily vitality in any way—e.g., acute illness; chronic diseases like nephritis and tabes; other conditions which directly upset the calcium metabolism of the body, such as the various types of fragilitas ossium, scurvy, and rickets; various obscure diseases of the ductless glands; and old age, in which the processes of decalcification normally outrun those of ossification.

Local abnormalities of the bone, such as the presence of a tumour or a cyst, which may itself have been the original cause of the fracture, can usually be diagnosed by X rays, and should always be suspected when a fracture occurs after very slight violence.

Other local causes are usually *mechanical*, such as the interposition of muscle or periosteum between the bone-ends, and if such are known to exist, or are strongly suggested by the X rays, operation should not be delayed. Another local complication is *injury to the nutrient artery*, and recent experiments on animals suggest that this plays an important part in the production of the non-union.

In the treatment of fractures it must always be remembered that bone is a living, varying structure, not constant in shape and density like the leg of a table. Every bone in the body is the constant subject of a double process—i.e., simultaneous destruction and reconstruction. The balance of these two processes is influenced by age, disease, and accident. In children the constructive process predominates, giving increase in length, width, and density to the bones. In old age the destructive phase is the prominent one, so that the bones become more porous and brittle. It is evident, therefore, that fractures in children are likely to be followed by rapid union, but there is a danger of excessive callus formation, which may interfere mechanically with neighbouring joints; in the fractures of old age, on the contrary, union is likely to be delayed, but the vigorous manipulations that stimulate it can be resorted to without fear of inducing excess of callus.

With regard to the function of the periosteum, it seems to be generally agreed now, after much swinging of the pendulum, that the fibrous layer acts as a limiting membrane, to keep the bone-forming elements within due limits; while, on the other hand, some of the most active of these cells are to be found just under the membrane, on the surface of the bone. Accordingly, when the periosteum is torn there is a risk of the formation of exuberant spurs of bone; but if it gets between the bone-ends at seat of fracture it may so check new-bone formation as to cause non-union. This is a very frequent finding with transverse fracture of the patella

* The Treatment of Ununited Fractures—II. Special Fractures—by Miss Forrester-Brown, will appear next week.

where a fringe from the quadriceps tendon and attached periosteum may hang down between the fragments.

The Distinction between Non-union and Delayed Union.

Before undertaking an operation it is desirable to be sure that one is dealing with true non-union, not merely *delayed union*. This distinction is not merely one of time, for in the absence of mechanical hindrances a fracture which has been inert for months may suddenly unite.

In the doubtful case, after all the causes, local and general, referred to above have been excluded, and measures have been taken to raise the general health of the body, it is wise to apply local stimulation to the bone-ends by such means as heavy massage; use of the limb, with just sufficient splinting to guard against gross displacement—e.g., for the lower limb walking in the Thomas calliper—and finally, hammering the bone-ends through the soft parts, as recommended by Hugh Owen Thomas. It may also be useful to apply intermittent congestion by rubber bandages round the limb above and below the fracture. Progress should be controlled every few weeks by X ray examination, when it should be remembered that, in the early stages of repair, callus which will give ultimate good union may contain too little calcium for it to be easily demonstrable on the skiagram. The progress shown by X rays will appear much slower than it is actually, so that most reliance must be placed on clinical signs.

Conversely, a fracture may appear in the skiagram to be united, when there is merely an interlock of irregular bone-ends, which will be found after operation to be sealed off from each other by a thin sheet of fibrous tissue. Such a fracture may give good function for a time, but this tends to diminish, while the limb tires more and more easily, and the bone becomes the seat of a chronic ache. It is sometimes hard to distinguish the deep tenderness in such a case from the tenderness of active callus, one of its most valuable signs. If mobility of the fractured ends persists with a total absence of tenderness, a true non-union can be diagnosed with almost complete certainty.

These points in diagnosis have been stressed at some length, because, unless they are appreciated, many unnecessary and some unsuccessful operations will be performed. A bone operation is never to be undertaken lightly, and certainly not unless strict asepsis can be guaranteed at the operation and efficient nursing afterwards. This does not mean that such operations cannot be done in the most remote highland cottage, since asepsis depends on the surgeon and the nurses more than on external conditions; nevertheless, the surgeon for whom conditions are not favourable will be wise to give his border-line cases the benefit of conservative measures first for a considerable time.

Operative Technique.

It will be clear from what has already been said that the first essential to the success of the operation is a radical clearing of the bone-ends from scar tissue and free opening up of the medullary cavity, whenever possible, by cutting away all the sclerosed bone from each end. Where sclerosis extends too far in each direction to allow of this, multiple tunnels may be drilled up the shaft till free bleeding occurs from them. In a fracture of the humerus, or of both bones of the forearm, it is better to shorten the limb by sacrificing a little of the length of the bone in order to get vascular bone end to end, rather than to leave in contact two pieces that look like ivory, for these would never unite. In the lower limb sacrifice of length is not lightly to be undertaken, but occasionally amounts up to 1 inch are justifiable. In the forearm, if the radius alone is ununited, as it is the key bone for the function of the hand, it is often justifiable to shorten the ulna, so as to allow end-to-end union, rather than to use a bridge graft, more especially if there is extensive scarring of the soft parts, which would not provide a suitable bed for a graft.

The use of *mechanical accessories* as a further stage in the operation is a complicated subject, though the principles involved are simple. If it is remembered that a bone is a living tissue, not an inert strut, then it will be recognised that many of the devices of the carpenter and the blacksmith, which may be admirable for the repair of wood and metal, may yet be quite ineffective for human bone; conversely, a type of joinery which would disgrace a carpenter may give excellent surgical results. Thus all forms of metal attachments have a tendency to cause atrophy of the bone in their neighbourhood, so that, however firm their hold at the operation, unless they are rapidly supported by living callus between the bone-ends they will be unable to resist deforming forces such as the body-weight. If they are applied so as to lie in, or just on the bone-ends, they may even inhibit the production of this essential callus, and so defeat the very object for which they were used. It is well known that the association of the slightest infection with such foreign material has a most injurious effect on tissues which might be able to cope with the infection alone. No surgeon can guarantee that in any fracture which has been compound his manipulations may not light up an infection, which had become quiescent, for such infections may remain latent for years in bone. Although the preliminary injection of antitoxin—e.g., antistreptococcal and antitetanic, in these cases is desirable, it cannot be made specific for every possible infection. For all these reasons metal should be used as rarely as possible, and should be removed as soon as its work is done; this latter recommendation is now agreed to even by most of the enthusiasts for plating. In the case of small fragments like the internal condyle of the humerus, which are difficult to keep in place after reduction, Stiles's method is useful—i.e., the use of a long nail, passed right through the skin, kept in sterile dressings, and removed at the end of three weeks.

Even autogenous bone-grafts are not exempt from some of the objections referred to in connexion with metal plates. Modern research on this subject suggests that bone-grafts act chiefly as a scaffold for the osteoblasts of the body to travel along in laying their new bricks, the graft being progressively removed by a process too subtle to be followed in skiagrams. Therefore a very dense graft, such as one from the crest of the tibia, acts almost as a foreign body and one difficult to remove; on the other hand, if osteoclasis happens to outrun osteogenesis, even the heaviest graft may break just at the site of the original non-union which it was supposed to cure. It is true that union may occur in such a broken graft, but the callus is seldom abundant. For these reasons it must not be thought that the use of a metal plate or a bone-graft eliminates the need for a certain amount of external splinting and the usual measures of after-treatment, such as massage and controlled movements. Some fractured bones can be trusted without a splint, even in the absence of a graft or plate; but those which require support normally will require it equally after a plastic operation.

For the fixation of the graft itself usually strong catgut sutures (Nos. 2 or 3 iodine-tannic catgut) through the periosteal sheath are sufficient. Sometimes it is possible to wedge the graft so firmly into a gutter in the fractured bone that no sutures at all are required. The intramedullary peg-graft has been given up almost entirely, even by those who were at one time its enthusiastic advocates, because it was found not to allow sufficient callus formation owing to blockage of the vascular medullary cavity.

Briefly summarised, the principles of treatment common to all cases are:—

1. Exclusion of all the causes of non-union, due to the *general state* of the patient's health, with appropriate treatment for any that are found.

2. Exclusion of all local causes due to pathological conditions of the bone, such as *tumours* and *cysts*, or if these are found, radical removal with restitution of the bone by some form of bone-grafting operation.

3. Careful and thorough treatment of any local *sepsis* in compound fractures with early removal of definite sequestra after careful study of radiographs in two planes, so that none may be missed.

4. Open operation when some *mechanical obstruction* to union is known to exist, or after a reasonable time has been given to conservative measures, when serial X rays show no evidence of callus and clinical examination confirms the diagnosis. At the operation free opening up of the medullary cavity each end, securing wide surfaces of contact of raw bone, if necessary with the assistance of an autogenous graft.

5. Adequate external *splintage* after operation and *physiotherapy* at an early date.

M. F. FORRESTER-BROWN, M.S., M.D. Lond.,
Surgeon, Bath, Somerset, and Wilts Central Children's Orthopædic Hospital.

Special Articles.

ON THE IGNITION-POINTS OF GASES IN NITROUS OXIDE.

BY H. B. DIXON, C.B.E., D.Sc., F.R.S.,
HON. PROFESSOR OF CHEMISTRY IN THE UNIVERSITY OF MANCHESTER.

AT the request of the Anæsthetics Committee of the Medical Research Council and the Royal Society of Medicine, I have made experiments on the ignition-points of certain gases when introduced into an atmosphere of nitrous oxide, and have compared such ignitions with those of the same gases in air and in oxygen. The two gases, ethylene and propylene, are of special interest medically on account of their proposed use in producing anæsthesia, and of the great violence with which these gases may explode when mixed with oxygen or air, or with other supporters of combustion such as nitrous oxide.

On consulting the literature of the subject it was surprising to find how little the flames of gases in nitrous oxide had been studied. Joseph Priestley, when he discovered the gas in 1776—calling it "Dephlogisticated Nitrous Air"—describes a candle as burning in the gas with a much enlarged flame, "sometimes twice as large as it is naturally, and sometimes not less than five or six times larger." Humphry Davy also observed the increase in size of the candle-flame when plunged into the gas. He seems to have formed the opinion that the heat of the burning body first decomposed the nitrous oxide, and that the combustion was the result of a direct union with the liberated oxygen. "Inflammable bodies in general," he writes, "require for their combustion in nitrous oxide much higher temperatures than those at which they burn in air or in oxygen." Most modern writers appear to have followed Davy's opinion, but our experiments are not in accord with this view. All the gases tested in our apparatus have *lower* ignition-points in nitrous oxide than in oxygen, and these ignition-points are found at temperatures below that at which the thermal decomposition of nitrous oxide is appreciable.

Hydrogen.

As the burning of hydrogen in oxygen is probably one of the simplest of the "flame" reactions initiated at a definite temperature, it was natural to start the investigation of flames in nitrous oxide with that of hydrogen.

On bringing an atmosphere of nitrous oxide round a small jet of hydrogen which is burning in air with a non-luminous flame, the change observed in the character of the flame is most remarkable: the diameter of the flame is doubled, while its height is multiplied by five. The central core (of a pale apricot colour) becomes luminous, and the spectrum given by it appears to be continuous from red to violet.

In the following determinations a steady flow of nitrous oxide was passed upwards through a large cylinder, while a jet of hydrogen was introduced from time to time from a narrow central tube opening in the middle of the cylinder. The lags between the moment of contact of the two gases and the appearance of the flame were noted, as the temperature of the furnace rises the interval ("lag") between the issue of the gas and its ignition gradually decreases until this becomes half a second; the current is then reduced and the temperature allowed to fall slowly. A second series of observations are then made while the "lag" gradually increases. The mean of the ascending and descending readings for each lag is taken as the ignition-point for that lag. The two series of readings (with rising and falling temperatures) were usually repeated five or six times, and the average of all the readings taken.

Experiments were made at pressures varying from 1000 mm. pressure down to 150 mm.; the *averages* of the readings are given in Table I. and (for comparison) the averages found for the ignition-points of hydrogen in oxygen taken from the curves at the corresponding pressures.

TABLE I.—*Ignition-points of Hydrogen in Nitrous Oxide and in Oxygen at Different Pressures.*

Pressure.	1000 mm.		760 mm.		550 mm.		400 mm.		250 mm.		150 mm.	
Atmosphere.	N_2O	O_2	N_2O	O_2	N_2O	O_2	N_2O	O_2	N_2O	O_2	N_2O	O_2
Lag—												
½ in.	594	627	597	625	572	611	549	591	524	563	504	533
1 in.	587	620	588	618	562	604	540	585	518	558	497	531
2 in.			577	606	554	598	534	575	513	552	491	528
3 in.			571	596	548	587	530	569	509	550	487	526
5 in.			562	58[illegible]	543	578	526	566	505	548	484	—

It is evident from [illegible]se figures that the ignition of hydrogen in nitr[illegible]oxide at different pressures follows the same gene[illegible]ule that governs the ignition of hydrogen and oth[illegible]ases in oxygen and in air. There is a crucial pre[illegible]e—about that of the atmosphere—above and b[illegible]w which the ignition-point falls. In every case [illegible] ignition-point of hydrogen in nitrous oxide is *lo*[illegible]than [illegible] oxygen under the corresponding condit[illegible]s.

Ethylene and Propylene.

Both ethylene and propylene burn in nitrous oxide with an enlarged flame having an intensely luminous central zone; they also form with nitrous oxide highly explosive gas mixtures. The ignition-points of these gases were determined in the same way by bringing them into the concentric-tube apparatus filled with nitrous oxide. In Tables II. and III. are given the average of the readings made at different pressures compared with those found for the same gases in oxygen under the same conditions.

TABLE II.—*Ignition-points of Ethylene in Nitrous Oxide and in Oxygen at Different Pressures.*

Pressure.	760 mm.		550 mm.		400 mm.		250 mm.		150 mm.	
Atmosphere.	N_2O	O_2	N_2O	O_2	N_2O	O_2	N_2O	O_2	N_2O	O_2
Lag—										
½ in.	592	604	605	624	605	660	592	650	578	617
1 in.	572	593	584	613	584	646	572	634	560	600
2 in.	529	584	554	601	548	625	—	614	—	580

The crucial pressure for ethylene in nitrous oxide is seen to be about 500 mm.; at this pressure ethylene ignites within half a second at 605° C. At the atmospheric pressure ethylene ignites rapidly at 592° C., which is only 14° C. below the ignition-point in oxygen; but when the mingling gases are in contact with a heated surface the difference between the ignition-points is more marked. Under the same conditions ethylene ignites at a lower temperature in nitrous oxide than in oxygen; but at low pressures the ethylene fails to ignite when the lag exceeds one second.

The ethylene used in these experiments was mainly that prepared and condensed in steel cylinders by the British Oxygen Company. This gas contains a very small amount of impurity (chiefly nitrogen), but gave the same ignition-points as that prepared and purified in the laboratory.

The propylene used was prepared in the laboratory both from normal propyl and from isopropyl alcohol. In each case ethers were formed in considerable quantity, and had to be condensed and washed from the gas. When the propylene was tested in the concentric-tube apparatus it ignited at ordinary

where a fringe from the quadriceps tendon and attached periosteum may hang down between the fragments.

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Before undertaking an operation it is desirable to be sure that one is dealing with true non-union, not merely *delayed union*. This distinction is not merely one of time, for in the absence of mechanical hindrances a fracture which has been inert for months may suddenly unite.

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Special Articles.

ON THE IGNITION-POINTS OF GASES IN NITROUS OXIDE.

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AT the request of the Anæsthetics Committee of the Medical Research Council and the Royal Society of Medicine, I have made experiments on the ignition-points of certain gases when introduced into an atmosphere of nitrous oxide, and have compared such ignitions with those of the same gases in air and in oxygen. The two gases, ethylene and propylene, are of special interest medically on account of their proposed use in producing anæsthesia, and of the great violence with which these gases may explode when mixed with oxygen or air, or with other supporters of combustion such as nitrous oxide.

On consulting the literature of the subject it was surprising to find how little the flames of gases in nitrous oxide had been studied. Joseph Priestley, when he discovered the gas in 1776—calling it "Dephlogisticated Nitrous Air"—describes a candle as burning in the gas with a much enlarged flame, "sometimes twice as large as it is naturally, and sometimes not less than five or six times larger." Humphry Davy also observed the increase in size of the candle-flame when plunged into the gas. He seems to have formed the opinion that the heat of the burning body first decomposed the nitrous oxide, and that the combustion was the result of a direct union with the liberated oxygen. "Inflammable bodies in general," he writes, "require for their combustion in nitrous oxide much higher temperatures than those at which they burn in air or in oxygen." Most modern writers appear to have followed Davy's opinion, but our experiments are not in accord with this view. All the gases tested in our apparatus have *lower* ignition-points in nitrous oxide than in oxygen, and these ignition-points are found at temperatures below that at which the thermal decomposition of nitrous oxide is appreciable.

Hydrogen.

As the burning of hydrogen in oxygen is probably one of the simplest of the "flame" reactions initiated at a definite temperature, it was natural to start the investigation of flames in nitrous oxide with that of hydrogen.

On bringing an atmosphere of nitrous oxide round a small jet of hydrogen which is burning in air with a non-luminous flame, the change observed in the character of the flame is most remarkable: the diameter of the flame is doubled, while its height is multiplied by five. The central core (of a pale apricot colour) becomes luminous, and the spectrum given by it appears to be continuous from red to violet.

In the following determinations a steady flow of nitrous oxide was passed upwards through a large cylinder, while a jet of hydrogen was introduced from time to time from a narrow central tube opening in the middle of the cylinder. The lags between the moment of contact of the two gases and the appearance of the flame were noted, as the temperature of the furnace rises the interval ("lag") between the issue of the gas and its ignition gradually decreases until this becomes half a second; the current is then reduced and the temperature allowed to fall slowly. A second series of observations are then made while the "lag" gradually increases. The mean of the ascending and descending readings for each lag is taken as the ignition-point for that lag. The two series of readings (with rising and falling temperatures) were usually repeated five or six times, and the average of all the readings taken.

Experiments were made at pressures varying from 1000 mm. pressure down to 150 mm.; the *averages* of the readings are given in Table I. and (for comparison) the averages found for the ignition-points of hydrogen in oxygen taken from the curves at the corresponding pressures.

TABLE I.—*Ignition-points of Hydrogen in Nitrous Oxide and in Oxygen at Different Pressures.*

Pressure.	1000 mm.		760 mm.		550 mm.		400 mm.		250 mm.		150 mm.	
Atmosphere.	N_2O	O_2	N_2O	O_2	N_2O	O_2	N_2O	O_2	N_2O	O_2	N_2O	O_2
Lag—												
½ in.	594°	627°	597°	625°	572°	611°	549°	591°	524°	563°	504°	533°
1 in.	587°	620°	588°	618°	562°	604°	540°	585°	518°	558°	497°	531°
2 in.			577°	606°	554°	598°	534°	575°	513°	552°	491°	528°
3 in.			571°	596°	548°	587°	530°	569°	509°	550°	487°	526°
5 in.			562°	588°	543°	578°	526°	566°	505°	548°	484°	—

It is evident from these figures that the ignition of hydrogen in nitrous oxide at different pressures follows the same general rule that governs the ignition of hydrogen and other gases in oxygen and in air. There is a crucial pressure—about that of the atmosphere—above and below which the ignition-point falls. In every case the ignition-point of hydrogen in nitrous oxide is *lower* than in oxygen under the corresponding conditions.

Ethylene and Propylene.

Both ethylene and propylene burn in nitrous oxide with an enlarged flame having an intensely luminous central zone; they also form with nitrous oxide highly explosive gas mixtures. The ignition-points of these gases were determined in the same way by bringing them into the concentric-tube apparatus filled with nitrous oxide. In Tables II. and III. are given the average of the readings made at different pressures compared with those found for the same gases in oxygen under the same conditions.

TABLE II.—*Ignition-points of Ethylene in Nitrous Oxide and in Oxygen at Different Pressures.*

Pressure.	760 mm.		550 mm.		400 mm.		250 mm.		150 mm.	
Atmosphere.	N_2O	O_2	N_2O	O_2	N_2O	O_2	N_2O	O_2	N_2O	O_2
Lag—										
½ in.	592°	604°	605°	624°	605°	660°	592°	650°	578°	617°
1 in.	572°	593°	584°	613°	584°	646°	572°	634°	560°	600°
2 in.	529°	584°	554°	601°	548°	625°	—	614°	—	580°

The crucial pressure for ethylene in nitrous oxide is seen to be about 500 mm.; at this pressure ethylene ignites within half a second at 605° C. At the atmospheric pressure ethylene ignites rapidly at 592° C., which is only 14° C. below the ignition-point in oxygen; but when the mingling gases are in contact with a heated surface the difference between the ignition-points is more marked. Under the same conditions ethylene ignites at a lower temperature in nitrous oxide than in oxygen; but at low pressures the ethylene fails to ignite when the lag exceeds one second.

The ethylene used in these experiments was mainly that prepared and condensed in steel cylinders by the British Oxygen Company. This gas contains a very small amount of impurity (chiefly nitrogen), but gave the same ignition-points as that prepared and purified in the laboratory.

The propylene used was prepared in the laboratory both from normal propyl and from isopropyl alcohol. In each case ethers were formed in considerable quantity, and had to be condensed and washed from the gas. When the propylene was tested in the concentric-tube apparatus it ignited at ordinary

pressures both in oxygen and in nitrous oxide at a lower temperature than ethylene under the same conditions, but at low pressures the ignitions of propylene in nitrous oxide were sometimes found higher than those of ethylene. The ignitions of propylene in nitrous oxide were always lower than in oxygen under the same conditions (Table III.).

TABLE III.—*Ignition-points of Propylene in Nitrous Oxide and in Oxygen at Different Pressures.*

Pressure.	760 mm.		550 mm.		400 mm.		250 mm.		150 mm.	
Atmosphere.	N_2O	O_2	N_2O	O_2	N_2O	O_2	N_2O	O_2	N_2O	O_2
Lag—										
½ in.	564	586	580	605	589	623	591	620	587	608
1 in.	554	574	569	594	575	608	579	605	575	595

The crucial pressure for propylene is some 200 mm. lower than that of ethylene, otherwise the ignitions are governed by the same general rule.

The results of these experiments show that Davy's generalisation does not apply to gas mixtures. Hydrogen, ethylene, and propylene (and presumably other gases) mixed with nitrous oxide form explosive mixtures more readily ignitable by heat than similar mixtures with oxygen.

INFLUENZA.

MEMORANDUM BY MINISTRY OF HEALTH.

IN 1919, when the last serious pandemic of influenza swept the world, and 112,000 deaths occurred in England and Wales alone, the Ministry of Health issued to all local sanitary authorities and medical officers of health a memorandum[1] summarising the latest available experience in dealing with the disease. In view of the prevalence of influenza in certain countries abroad, the Minister has now circulated a revised edition of this Memorandum.[2] The information it contains, although it will not add greatly to the knowledge of most practitioners, has been carefully compiled from reliable sources and forms a useful résumé of our present knowledge of ætiology, prophylaxis, and treatment.

SUMMARY OF THE MEMORANDUM.

The following is a summary of the Ministry's pronouncement:—

Influenza, if uncomplicated, is short and sharp, and recovery is rapid. The deaths that it causes are usually due to pulmonary or cardiac complications, and in severe and fatal cases it is generally shown that some organism not specifically associated with influenza has obtained a foothold, probably because of the lowering of the resistance by the influenza virus. The commonest complication, especially in the autumn and the spring, is pneumonia. The infection passes very rapidly through a community and will spread over a large town in a few weeks. Enough is not yet known about the epidemiology to enable a central authority to give timely warning of a serious outbreak. Epidemic periods usually end by the waves of prevalence becoming less intense and more widely spread. The symptoms of the later cases become more and more confused with those of ordinary catarrhs, which come to be regarded as influenza on comparatively slight evidence, so that the term "acute epidemic influenza" becomes forgotten, and "influenza" is applied to all kinds of indeterminate febrile conditions. This tendency makes it so difficult to procure continuous records of the occurrence of true influenza that it is impossible to forecast with any confidence the arrival of a new epidemic wave.

[1] THE LANCET, 1920, i., 41.
[2] Memorandum on Influenza. Med. II. 1927. London: H.M. Stationery Office. 2*d*.

Ætiology.

Although research is being keenly prosecuted in many countries the nature of the virus of influenza is still unknown. No specific form of treatment or prophylaxis exists, nor is it possible to distinguish surely between the autumn and winter outbreaks of "influenzal catarrh" and the pandemic form of 1918 and 1890. On the bacteriological question opinion is still divided between the adherents of Pfeiffer's theory and those who believe that the true causal agent is some other organism, probably a filter-passer, like that which Olitsky and Gates have called *Bacterium pneumosintes*. Pfeiffer admits that he cannot explain the remarkable increase in the virulence of the bacillus which must be assumed to occur at the onset of an epidemic, nor has he succeeded in satisfactorily associating his bacillus with the disease by serological methods. Although his theory leaves so much to be desired the opposite school have probably a long task before them if they are to accumulate sufficient evidence to win the day.

The facts concerning the spread of the disease are, however, fairly well established. Infection is conveyed from the sick to the healthy by the secretions of the respiratory surfaces, which are transmitted through the air as a fine spray in coughing, sneezing, and even in loud talking. There is a special danger of receiving a massive infection from a person talking loudly within four feet, or coughing or sneezing, without interposing any screen, within ten feet. A lesser danger occurs when finer infective particles are carried longer distances by draughts or convection currents. The channels of reception are normally the nose and throat, and sometimes the eyes. Only a brief exposure is necessary in order to contract infection, and the closer the contact the more readily is the virus transmitted. It is therefore vitally important to avoid overcrowding of every kind in places of public resort, public conveyances, factories, camps, living rooms, and dormitories. When many persons are collected in the same sleeping quarters there is an additional danger of the spread of secondary infections. Infection can also be carried to the mouth by a hand soiled with the respiratory secretion of an infected person, or by the use of a soiled handkerchief. Temporary overcrowding in trains, trams, omnibuses, and places of entertainment is a more important factor in the spread of an epidemic than is overcrowding in the home; no regular increase of the attack rate has been proved to follow an increase in the number of persons per room in urban tenements.

The period of incubation is about 48 hours, or perhaps somewhat less. There is evidence that an attack of influenza may confer some degree of immunity for a few months, but this is by no means invariable.

MEASURES OF PERSONAL PROTECTION.

In the absence of specific prophylaxis, most members of the community who continue their ordinary work must expect to be exposed to infection, but every citizen can do a great deal both to safeguard himself and to avoid infecting others.

Ventilation.—Well-ventilated, airy rooms minimise risk by promoting physical well-being. Fresh air dilutes and dissipates infective material. Draughts and chilling of the body-surface should be avoided.

Nutrition.—Good nourishing food is desirable. A Memorandum issued in 1919 by the Royal College of Physicians states that alcohol in excess invites disaster, and that everyone should maintain unaltered within the limits of moderation the habits which he has found to keep him in the best health. Cod-liver oil raises the immunity.

Gargling.—The importance of gargling should not be overrated; it is chiefly useful on returning home after exposure to infection in a crowd or from an infected person. For gargling one of the most effective antiseptics, and a palatable one, is a full tablespoonful of compound glycerine of thymol to a tumblerful of warm water. Cheaper, and perhaps

equally valuable, is one part of permanganate of potash to five thousand parts of warm water.

Masks.—The temporary use of masks by those who are attending patients may be occasionally desirable, but for general purposes they are not recommended. By hindering the free circulation of air through the nasal passages they cause turgescence and œdema of the mucosæ, and possibly increase the liability of infection.

Vaccines.—No vaccine is yet available which will ward off an attack of the disease, but there is evidence that the use of suitable vaccines may protect against complications by secondary infection, especially those of the pneumococcus and streptococcus. No drug has been proved to exert any specific influence as a preventive of influenza.

Needless Exposure.—Most people are able to avoid at least some occasions of forming part of a crowd or assembly without prejudice to their necessary occupations. To keep away from all places of public resort or social gathering will increase the chances of any citizen of remaining immune.

Precautions when Attacked.—The first symptoms are well-known, and to continue at work after they appear is bad for the patient and may be dangerous to others. Workers obviously ill should at once be sent or taken home. Where influenza is prevalent no person should in any way be penalised for staying away from work for even a slight attack of influenza or any form of feverish cold. On the contrary, he should be expected or required to do so. At the first feeling of illness or rise of temperature the patient should go to bed, keep warm, and seek medical treatment. The doctor, if called in at once, has the opportunity of giving advice or treatment which may forestall the more dangerous complications. Relapses and complications are much less likely to occur if the patient goes to bed at once and remains there for two or three days after all fever has gone. Much harm may be done by getting about too early, and many evil consequences are due to chill and over-exertion during convalescence.

The early stages of the attack are the most infectious, but the infection may persist throughout the illness, and the patient should be isolated at least until the temperature is normal. If he cannot be given a separate room, the head of the bed should, if possible, be screened off. The virus of influenza is easily destroyed and extensive disinfection is unnecessary. All expectoration should be received in an antiseptic solution, and discarded handkerchiefs should be immediately placed in disinfectant or, if of paper, burned. Those attending a patient should avoid inhaling his breath, particularly when he is coughing, sneezing, or talking. The patient himself should turn aside at these times and hold a handkerchief before his mouth. The nurse's hands should be washed at once after contact with the patient or the discharges from his nose and throat.

MEASURES FOR THE LOCAL AUTHORITIES.

The imposing of quarantine on persons arriving from abroad has been dismissed as impracticable.

Education.—Most important work can be done by the health authorities by means of leaflets, posters, notices in the press, lectures in the schools, &c., to teach the public the facts about influenza and its gravity, and the methods by which they may prevent infection and look after themselves if attacked. No less important is full and exact information about the local facilities which have been provided in the district. Every person should know: how to apply for nursing assistance; the special arrangements for the provision of medical attendance; how a household stricken by influenza can apply for "home help"; the positions of public kitchens, creches, &c.; the hospitals and ambulance services available for sudden or severe cases.

Notification.—The Ministry has decided not to make influenza a compulsorily notifiable disease. Notification is not likely to improve preventive measures nor to help local authorities to attend to those cases or households which most need assistance. The statistical value of notification is compromised both by the large number of cases not seen by a doctor at all, and by the uncertainty with which the term "influenza" is used. Many local authorities will, however, find it useful to make an arrangement with practitioners in their district to notify all cases where nursing, home-help, or institutional treatment is required. Otherwise health visitors may be used to report such cases. Acute influenzal pneumonia is, of course, already notifiable in all districts of England and Wales under the Public Health Regulations.

Protection of Doctors and Nurses.—Authorities do not fully realise the importance of protecting those in attendance on the patient. One of the most tragic features in the last pandemic was the high mortality among hospital staffs, some of which might have been prevented by observing the ordinary precautions applicable to all acute infectious diseases.

Closure of Schools.—In rural and small urban districts where the children have few opportunities of coming in contact with each other outside the school, this measure may be useful. It has not much value in densely-populated towns. When day-schools are closed, Sunday-schools should be closed as well. Children showing symptoms of influenza should be excluded from school until their heart and lungs have been carefully examined to eliminate latent complications and sequelæ.

Public Places of Entertainment.—The Emergency Regulations issued by the Local Government Board in 1918 gave local authorities power to compel the proprietors of all places of public entertainment to exclude from their performances children of school age, and to provide intervals for the sufficient ventilation and perflation of the building. These regulations were withdrawn in May, 1919, and no sufficient justification has yet been advanced for their reissue.

Other Centres of Overcrowding.—The overcrowding of trains and trams was largely responsible for the spread of the disease in 1918. Permanent through ventilation should be generally advocated and adopted.

Disinfection.—The routine disinfection of premises and articles after use by influenza patients is not called for, but a thorough washing and cleansing of rooms and their contents and of washable articles, bedding, or apparel is desirable. The practice of spraying halls and places of public resort with disinfectants is of little use, and tends to create a false sense of security.

ORGANISATION OF LOCAL MEDICAL SERVICES.

Domiciliary Medical and Nursing Service.—In serious epidemics, where it is difficult to ensure that every case as it arises shall have early and adequate professional treatment, it is often useful to form a "pool" of unattached medical men whose services can be placed at the disposal of practitioners as required. In larger areas part of such a pool may be formed by the health authority's own medical staff. Shortage of nurses is often a more serious problem, but may be combated by subdividing the district into small areas and using one or more nurses in each area as a nucleus for a body of voluntary helpers. Some local authorities in extreme emergencies may have to liberate their maternity and child welfare workers and health visitors for this purpose. Any scheme should include the coöperation of the local district nursing association. Many kinds of home assistance can be arranged with the help of the health visitors, and certain districts may find it desirable to establish emergency kitchens for supplying food to affected households, and to form creches for children whose parents are unable to look after them.

Provision of Institutional Treatment.—The local authorities will often find it helpful to use one or more wards of the isolation hospital to supplement the general hospitals and Poor-law infirmaries.

They should take care in selecting cases for removal to hospital. Patients with pulmonary complications bear removal badly, and should only be moved with the concurrence and supervision of their medical attendant. Patients in hospital should be isolated by screening or otherwise, and ambulance and nursing attendants should observe all the precautions proper to the handling of an acutely infectious respiratory disease. By the establishment of emergency hospitals in schools, halls, and large unoccupied private houses, the supply of doctors and nurses, particularly the latter, may be considerably economised.

THE VITAL STATISTICS OF NEW YORK STATE.

New York State has a population of ten and three-quarter millions, of which more than one-half lives in New York City itself. It has a complete system of registration of births and deaths, and its experience, for many reasons, is more interesting than that of any other community with a corresponding population.

Birth-rates.—One reason for this is the mixed character of its population, which is largely foreign born. The fertility among different sections of the population is fully set out. Thus the average number of children born to those women of the several racial stocks who became mothers in 1923 was: for native white women, 2·8; for natives of Poland, 5·0; of Hungary, 4·8; of Italy, 4·6; of Great Britain, 2·9. But these figures do not necessarily relate to completed families and may not be strictly comparable. The contrast as to medical attendance at birth between New York State and England is striking. In the latter a majority of births are attended by midwives; in New York State there is a medical attendant in over 90 per cent. of the total confinements, the lowest proportion being 53 per cent. for Poles and 61 per cent. for Hungarians.

Death-rates.—The total death-rate for the State was 13·1 per 1000, a reduction of 28 per cent. as compared with 1900. The reduction was equal to one-half at ages under 9, to one-third between 10 and 39 years. The success of organised public health work is especially indicated by the reduction of the diarrhœal death-rate (under 2) from 124 to 27, of diphtheria from 45·4 to 9·4, and of typhoid fever from 26·7 to 2·9 per 100,000 of population. In a series of tables rates are given which will enable the student of statistics to compare deaths and causes of deaths for each age-period with those of other countries. At all ages in the aggregate, diseases of the heart, pneumonia (all forms), cancer, and tuberculosis headed the list in seriousness, chronic nephritis and accident coming next in sequence. In a striking table it is seen that at ages 4–5, 5–9, 10–14, accidents hold first place as a cause of death for both sexes, and that for males they occupy the same place at ages 15–19. At ages 2–4 pneumonia is the chief cause of death; At ages 15–44 tuberculosis holds this place; and it is only after the age of 45 that the congeries of end-results called diseases of the heart take the first place in determining death.

Infant and Maternal Mortality.—The infant mortality-rate, 72 per 1000, was the lowest on record. It varied from 160 among negroes, 103 in Canadians, and 98 in Poles, to 43 in infants of Russian mothers, who in New York State are mainly Jewish. The number of deaths from diseases of the puerperal state per 1000 births was 5·3. There is a remarkable difference between New York City and the rest of the State in puerperal septicæmia, the death-rate being 8·5 per 10,000 births in the City and 18·7 in the rest of the State. There is little difference between the two in respect of all other puerperal causes of death.

Tuberculosis.—Not only has the death-rate from tuberculosis declined to a remarkable extent, but now the rate for this disease (all forms) is lower in New York, being 95·7 per 100,000 of population, as compared with 100·8 for the rest of the State. At nearly all ages male was higher than female mortality from this disease. In New York City at ages 45–54 the male was two and a half times the female rate: at ages 55–64 it was three times; and after the age of 65 more than twice the mortality among females.

Cancer.—The registered death-rate from this disease was 113·9 per 100,000, representing an increase of 38 per cent. since 1910. In the same interval the registered mortality from cancer increased by 53 per cent. in Buffalo, by 67 per cent. in Schenectady, and by only 13 per cent. in Rochester and 16 per cent. in Syracuse, and it appears reasonable to assume that these variations are due more to differences in certification of death than in incidence of disease.

Bronchitis and Pneumonia.—One of the most interesting differences between American and English statistics is the extent to which in the former pneumonia exceeds bronchitis as a registered cause of death. In 1913–17 in New York State bronchitis was the cause of an average of 18·5 deaths per 100,000 of population, while pneumonia caused 172 per 100,000. The pneumonia death-rate was practically equal in New York City and in the rest of the State, and there was but little difference between the rural and the urban death-rate from pneumonia.

Alcoholism.—In view of the discrepant evidence as to the results of prohibition the following figures are of interest, relating as they do to one of the "wettest" states in the Union.

Alcoholism: Death-rate per 100,000 Population, New York State.

1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
9·2	7·9	10·1	8·3	3·8	2·6	1·4	1·7	3·5	5·5

Since 1923 there has probably been some further increase. With these may be contrasted the figures for cirrhosis of the liver.

Years. Average of—	Rate per 100,000.	Years.	Rate per 100,000.
1913–17	14·7	1922	7·0
1918–22	7·8	1923	6·2

In this instance the death-rate, unlike that from alcoholism, appears to be still declining.

Deaths in Asylums.—It is noteworthy that in one of 22 deaths of adults "mental darkness preceded physical death." These deaths include only those occurring in public institutions.

MEDICINE AND THE LAW.

Small-pox at Sheffield—Parents Fined.

A FATHER and mother were fined £2 10*s.* each at Sheffield on Jan. 13th for exposing their children when suffering from small-pox, the father being further fined £1 for not notifying the cases. Dr. F. E. Wynne, medical officer of health, said that the children showed signs of having had small-pox for five weeks. Three children were infected; it appeared that the eldest girl was working in a place where several others were employed; a room in the house was used for meetings, and one of the children admitted visitors and conducted them to this room; a son was sent by his mother to take the father's dinner to his place of work, even after she had been informed that the boy was suffering from small-pox. The mother said she thought the children had chicken-pox, though they had suffered from that only six months before. Other evidence indicated that she had been reluctant to part with her children to the hospital, though, once they were removed there, she was full of praise for the officials.

On the same day, at Sheffield, two other parents were fined 5*s.* each for permitting their son, while suffering from scarlet fever, to be exposed without proper precautions against spreading the disease. The case had been notified early in November. An inspector, who visited the house, found eight persons living in it, and arranged to remove the boy to hospital. Apparently all the scarlet fever beds at the hospital

were, at this time, occupied, and the parents were told to keep the child isolated. It was later found that the boy, though still in the peeling stage, had been sent on an errand, the parents pleading ignorance of the fact that he was still in an infectious state.

Silver Poisoning.

A verdict of death from pneumonia, with silver poisoning as a contributory factor, was recorded on Jan. 10th at an inquest at West Bromwich upon the body of a silver polisher. The report of the case in the *West Bromwich Free Press* revealed some difference of opinion among the medical witnesses. Dr. Downie, resident physician of Hallam Hospital, said that the post-mortem examination showed the cause of death to be meningitis, of which no mention was made on the death certificate, which gave the causes as pneumonia and heart failure. He found that the skin of the deceased's neck and face was pigmented and of a bluish colour. In reply to the coroner, he is reported to have said that he was of opinion that there was no such thing as silver poisoning, and that the presence of silver in the body would have no harmful effect. Dr. Mackenzie, of Birmingham University, gave evidence that he had found a silver deposit in certain organs of the body. This, he considered, would lower the patient's vitality to such a degree that no insurance company would accept him under a policy. He regarded silver poisoning as a contributory cause of death, and denied that the matter was one of speculation. The deceased's private medical practitioner, Dr. Moore, also expressed the opinion that the patient had suffered from silver poisoning. The assistant works manager of the firm which had employed the man said that the firm used only pure silver. He stated that he had never heard of silver poisoning, nor had any other employee suffered from pigmentation or showed any bluish colour. In recording the verdict as mentioned above, the coroner remarked that it was obvious that cases of silver poisoning were rare, and that the deceased was evidently susceptible. He had been taken ill last May and was in hospital till July, when he was discharged and went to recuperate at Llandudno; his health, however, did not greatly improve, and in December he was again ordered to hospital, suffering from pleurisy and pneumonia. In the coroner's opinion the presence of silver deposits accounted for the abnormal period of continuing debility.

Disposal of Sewage.

An important action was lately brought by the Attorney-General, on the relation of the corporation of Bradford, asking the Court of Chancery to restrain a wool-combing company from causing or suffering sewage from its works which would interfere with the treatment or utilisation of the city's sewage to flow or pass into the municipal sewers or drains. Bradford's problem is peculiar. As the centre of the worsted industry it has to cope with a large proportion of the wool-combing and wool-washing of the country. Wool-combing operations produce immense quantities of suds; wool-washing removes from the fleeces, with the aid of alkaline substances, a mass of lanoline fat which does not float upon the surface of an effluent and therefore cannot be skimmed off. Under a local Act of 1897 the city took power to deal with this refuse. The Act imposed penalties upon firms which caused the refuse to enter the sewers, but, by a not unusual compromise, exempted the manufacturers if they had done their best to prevent it and had erected suitable apparatus for the purpose. The difficulty of erecting apparatus has been the want of space in many instances. The corporation of Bradford has made agreements with several manufacturers and offered to make a similar agreement with the company against which action is now being taken. This company, however, asserted its right to throw alkaline matters into the municipal sewers—an assertion which the corporation was bound to contest. On the corporation's behalf it was estimated that the defendant company sent 78,000,000 gallons of untreated refuse into the sewers every year, and that the treatment of this volume with sulphuric acid involved an additional amount of 55 tons of acid per week. If the defendants succeeded in their contention, and if other wool-combers also sent their refuse into the sewers untreated, the municipal drainage system would break down, and the sewage purification works (on which 2¼ millions had been spent) would be utterly insufficient for the discharge of the corporation's statutory duties. After hearing evidence on behalf of the city, the defendant company consented to give an undertaking in the terms of the statement of claim, and submitted to an order to pay the costs of the action. There will be an inquiry as to damages. The defendant company admitted that it could not claim a prescriptive right to turn its waste into the sewers. The case illustrates the modern difficulties of large-scale sewage disposal in trade centres, and shows the kind of problem which the advocates of clean rivers sometimes have to solve.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Appointment of County Medical Officers of Health.

THE Department of Local Government and Public Health is meeting with considerable opposition from the local authorities throughout the Irish Free State in regard to the appointment of county medical officers of health.

The appointment is compulsory under the Local Government Act (1925), but most of the county health boards are pleading one excuse or another in order to postpone action. In face of this position the Department has taken an unusual and courageous step in making a propagandist communication to the Press on the subject of expenditure on public health. Last week Mr. E. P. McCarron, the Secretary of the Department, who was accompanied by Dr. E. F. Stephenson, Chief Medical Officer, received representatives of the Press, and told them that the public health organisation was definitely behind modern requirements, owing largely to the fact that the expert local health officers were primarily employed in treating disease.

The relatively backward condition of hygienic control in Ireland had placed the country at a commercial disadvantage with such rivals as Denmark, and while not as important as the health of the people, the trade aspect of public health administration was important. The main essentials in public health administration were: (1) Sanitary areas of adequate extent; and (2) trained whole-time health officers to control the sanitary inspectors and to administer the laws and regulations impartially. Infection and disease had little relation to arbitrary administrative boundaries, and it was beyond dispute that the best results in the prevention of human suffering and death were achieved in large areas of local control.

Experience had shown that however competent a part-time medical practitioner might personally be, he frequently suffered from certain unavoidable disabilities in his capacity as a medical officer of health. He was individualistic rather than communal in outlook, and his public duties conflicted with his interest as a private practitioner and often brought him into collision with his fellow practitioners.

The ophthalmic experts of the Department, said Mr. McCarron, stated that 690 pensions in the Saorstat were paid to persons whose blindness was attributable to preventable causes. The wreckage of human beings caused by crippledom, which was largely preventable, was one of many other unnecessary burdens of the ratepayer, and economy secured at the expense of the people's health was prodigal waste of a national asset. Considering that the actual cost of this fundamental service in most country areas was but a fraction of 1*d.* in the £, it was difficult to understand the hesitancy of local authorities in making the appointments.

Correspondence.

"Audi alteram partem."

BLOOD PRESSURE IN INFLUENZA.

To the Editor of THE LANCET.

SIR,—While the present outbreak of influenza is still in progress may I draw attention to a clinical phenomenon which I believe to be of both diagnostic and prognostic importance. I refer to the fall of blood pressure which is almost always to be found in cases of any severity. My attention was first drawn to this sign during the epidemic at the end of the war, when I referred to it in a report to the Medical Research Council (Special Report Series, No. 36.) I then recorded the average systolic blood pressure of a ward of 35 soldiers as being only 93 mm. Hg. It is possible that at that time other factors, such as fatigue, contributed to the low value, but I find the same now among private and hospital patients, in whom a fall of 10 to 20 mm. seems to be common.

The low systolic pressure undoubtedly indicates a toxic condition of the cardiovascular system, and may be in part responsible for the throbbing character of the frontal headache, and for other symptoms. I have heard of and seen several cases who, on sitting up in bed suddenly have fainted or become so dizzy as to have to lie down again at once. Such patients have low systolic pressure. The pressure seems to be at its lowest at about the fourth or fifth day, which is just when in so many cases the fever has passed and the patient wants to get up and see to his affairs. No patient should be allowed to leave his bed in this condition. During convalescence the blood pressure rises slowly to its normal, but may take a week or two to attain it. Much of the feeling of depression and lassitude after influenza is associated with this condition.

From my observations on the morbid anatomy of this disease during 1918-1919 (over 170 post mortems) I found the heart muscle to be constantly affected. Hyaline degeneration of all the muscular tissue of the body occurs rapidly in influenza, and its effect upon the heart muscle is seen in the systolic blood pressure. I think it probable that the toxin of influenza affects the suprarenal bodies also, and through them produces a lowered pressure, but I think the chief method of its production is cardiac.

No one would knowingly allow a patient whose heart muscle is in this condition to get up, take a hot bath, or go out, but would keep him in bed and administer tonics until the period of risk is passed. I would like to draw attention to the systolic blood pressure as one of the few sure guides in allowing a patient suffering from influenza to get about, and as an inclination for further tonic or convalescent treatment.

I am, Sir, yours faithfully,

T. H. G. SHORE.

Harley-street, W. 1, Jan. 24th, 1927.

IS THE PRESENT EPIDEMIC OF INFLUENZA DUE TO A STREPTOCOCCUS?

To the Editor of THE LANCET.

SIR,—Towards the end of last century the influenza bacillus, or Pfeiffer's bacillus, was incriminated as the cause of influenza, and the ætiology of this important disease was hardly even further questioned until the occurrence of the pan-epidemic of 1918. Investigations made into the ætiology of this last great epidemic began to show that it was very doubtful if Pfeiffer's bacillus was after all the true cause of the malady, and many bacteriologists inclined towards the belief that the disease was due to some strange unknown, minute, filter-passing virus. The researches of Olitsky and Gates at the Rockefeller Institute revealed the presence in influenza cases of a minute Gram-negative anaerobic bacillus which they named *Bacterium pneumosintes*. This organism, obtained from the naso-pharynx of early cases of influenza, is capable of passing through certain Berkefeld filters, and appeared to cause a febrile disease in rabbits. The new organism was very difficult to cultivate, and in consequence vaccines were difficult to prepare, but vaccination on a more or less limited scale with this organism gave rather indifferent prophylactic results. During the last few years a scanty amount of confirmatory evidence of Olitsky and Gates's work has appeared, but it is by no means yet proved that *B. pneumosintes* is the true cause of the disease.

Towards the end of 1924 the writers discovered a new medium which grew *B. pneumosintes* very easily and profusely, and succeeded in cultivating it from several cases of influenza. A large amount of the appropriate vaccine was prepared, and preliminary experiments showed that it was very toxic, but this vaccine has not yet been exhaustively tested as to its value in preventing the disease. The position to-day may therefore be summed up by saying that we are still by no means certain as to what is the true causal organism of influenza.

About six weeks ago one of us contracted rather a severe attack of typical influenza, with fever, headache, vague pains all over the body, intense prostration, slight catarrhal symptoms in the left nostril, but no definite bronchitis or sore throat. As we possessed a very good culture medium for *B. pneumosintes* we determined to make an attempt to isolate this organism. A swab from the left nostril was inoculated into the medium, and 5 c.cm. of blood drawn off during the first day of the fever was distributed into two further tubes of the same medium. All the cultures were incubated anaerobically. *B. pneumosintes* did not appear in any of the tubes, but to our surprise a pure culture of an unusual streptococcus was obtained from the nasal swab and also from the blood. The streptococcal cultures were plated, and the streptococcus from the nose and from the blood were found to be identical. Here then we have a certain amount of reason for suspecting that this attack of apparently true influenza was due to a streptococcus which had its primary focus in the nose and which invaded the blood stream. The temperature in this particular case remained at a level of 101° to 102°C. for four days. The attack was followed by the usual symptoms of depression and weakness.

We hope to publish full details of this particular streptococcus with microphotographs in a later paper. In broth culture it is a small streptococcus occurring in fairly long chains, whilst on solid media it is extremely pleomorphic, showing large ovoid forms with pointed ends. It produces strong bleaching on boiled blood agar. In view of the fact that influenza is now very prevalent, we believe that the isolation of this streptococcus will be of interest to other bacteriologists.

We are, Sir, yours faithfully,

DAVID THOMSON, M.B. Edin., D.P.H.,
ROBERT THOMSON, M.B. Edin.

Jan. 24th, 1927.

AN ENORMOUS EXTRAPERITONEAL CYST.

To the Editor of THE LANCET.

SIR,—A Mahommedan woman aged 36 came to me with what appeared to be a huge ovarian tumour. It was noticed about seven years ago, after the birth of her fourth child, and was more on the right side than the left. After this she had four more children, and labours were difficult. The tumour was tapped three times before she came to me. I gave her morphia, gr. ¼ and hyoscine, gr. 1/100, and an hour afterwards incised the lower part of the abdominal wall and tapped the tumour, draining it

slowly into a bucket. The fluid measured 40 pints and was quite clear.

It was my intention, then, to give her spinal analgesia, but she was so deeply narcotised that I extended my incision considerably without even further local analgesia and started to strip it. To my surprise I found I was not in the abdominal cavity. The cyst was extraperitoneal and all the abdominal contents were packed away into the upper part of the abdomen. The cyst wall was gradually stripped off; no pedicle was found. A large drainage-tube was pushed through close to the centre of the crest of the ilium and the abdominal wall sutured. Free sanious oozing took place through the tube which was shortened day by day and removed on the sixth. The intestines gradually came back into their normal position. The woman made an uneventful recovery and went home on the seventeenth day.

This was, I suppose, a pelvic cyst which gradually stripped up the peritoneum as it extended upwards. I should be glad to hear any suggestion as to its possible origin. To me it was remarkable to be able to perform an extensive operation under a single injection of morphia and hyoscine.

I am, Sir, yours faithfully,

F. J. W. PORTER,
Major, R.A.M.C. (retd.).

Karachi, Dec. 30th, 1926.

PULMONARY EMBOLISM FOLLOWING OPERATION.

To the Editor of THE LANCET.

SIR,—Dr. W. A. Lister's statistical study of post-operative pulmonary embolism (THE LANCET, Jan. 15th, p. 111), is a most valuable contribution to our very limited knowledge of this difficult, but most important problem. I am gratified to find that Dr. Lister's figures tend to confirm several of the conclusions,[1] which I arrived at in 1921, but which are still not generally admitted. Perhaps the most important of these is that sepsis is not a factor of importance. A great many surgeons still believe that sepsis in some form is the main factor in the production of thrombosis after operation. These figures, which are much more complete than any hitherto produced, give very strong evidence that sepsis cannot be considered an important factor.

Dr. Lister also confirms my conclusion that venous stasis in the large venous trunks of the abdomen is the main factor, and his argument that this stasis tends to be produced as a secondary result of an abdominal incision is sound. His contention is that the pain caused by any movement of the abdominal wall tends to hamper the action of the diaphragm, which is necessary for maintaining the flow of blood through the great abdominal veins. I suggest that the presence of a tight bandage round the abdomen is also a factor of importance in hampering the excursions of the abdominal wall.

The difficulty in accepting this theory of venous stasis is, as I pointed out five years ago, that experimental evidence shows that venous stasis alone cannot produce intravascular clotting. The ligature of a vein in two places, so as to produce complete stasis of the contained blood, does not result in the formation of a thrombus within that vein, even in two weeks. Some other factor must therefore be present before stasis is able to produce intravascular clotting. I suggested that a substance present in all tissues, but normally not present in blood—namely, thrombokinase, is the factor. This substance is liberated whenever tissues are injured, as by an operation or fracture of a bone, or even normal childbirth. If stasis in the veins coincides with the liberation of thrombokinase owing to an injury, then both the factors necessary for the production of a thrombus are present and a clot may form. Dr. Lister says in his article, "if the liberation of thrombokinase predisposed to the condition, then such operations as Halstead's amputation of the breast or nephrectomy should show a high rate of incidence," but this is not so, as in these operations, although thrombokinase is liberated, as it is in all operations, the other factor, stasis of the blood in the large veins, is not present, or at least not in the same degree as when an abdominal incision has been made. As proving the importance of this substance, thrombokinase, as a factor in the formation of clotting, there is an old but interesting experiment. If blood is drawn off from the centre of a large blood-vessel by means of a needle and syringe, great care being exercised to prevent any possible contamination of the blood with any substance not normally present in the blood itself, the blood so obtained will not clot at all. It will in fact go bad and decompose eventually without clotting.

Dr. Lister's paper, has I believe, helped very much in clearing up some of the debatable points in the difficult problem of post-operative thrombosis and embolism, and demonstrates how useful the statistical methods can be when properly carried out. Our knowledge is still very deficient, and further light is badly wanted on the physiological and experimental side of the problem, especially in relation to the exact mechanism of intravascular clotting, and a more exact knowledge of the physiology of the condition might, and probably would, go a long way to solve the surgeon's problem of how to prevent his patients getting pulmonary embolism after operations. It is a subject for regret that in these days the physiologist and the surgeon are not in closer touch. In the present state of our knowledge I doubt if there are any means known to us of either preventing, or dealing with, the condition, which are of any value. Early movement and massage are doubtful expedients, as I believe that quite often the clot forms either on the operating table, or before the patient is round from the anæsthetic, and under such circumstances these measures will do harm rather than good. It is full time that we did know how to prevent the condition as it is accountable for quite a considerable number of disasters, and the general impression among surgeons is that it is becoming more frequent as a complication of abdominal operations.

I am, Sir, yours faithfully,

J. P. LOCKHART-MUMMERY, F.R.C.S.

Hyde Park-place, W., Jan. 22nd, 1927.

[1] Proc. Roy. Soc. Med., Surg. Sect., 1921–22.

OBESITY AND TEMPERAMENT.

To the Editor of THE LANCET.

SIR,—After reading of the Italian Premier's alleged dislike for obese people, I thought it might be of interest to analyse the temperamental characteristics displayed by the fat and the lean as met with in general practice. Though there may be exceptions, the metabolic processes in the adipose are usually slower than in the lean, and this probably accounts for the good nature and easy going character usually displayed by fat people. The slim figure demanded by modern fashion has led to innumerable cases of dieting among obese women, and I have noted how a previously contented, cheerful and placid individual has, on attaining a marked reduction in her weight, become irritable, sullen, and often definitely bad tempered. I admit that with moderate reduction in weight in cases where the obesity has been marked activity of both body and mind is usually increased, but if the reducing process has been carried too far, pronounced lassitude with nervous irritability occurs. Like the Cæsar who preferred fat men around him complaining that "Yon Cassius hath a lean and hungry look," I think most of us have learnt to expect and discover geniality and sociability among those with a leaning to adiposity.

I am, Sir, yours faithfully,

ALFRED A. MASSER, M.B., Ch.B.

Penistone, Jan. 16th, 1927.

TREATMENT OF TUBERCULOSIS BY MR. SPAHLINGER'S METHODS.

To the Editor of THE LANCET.

SIR,—Dr. Nelson refers to "cases treated under the immediate supervision of Mr. Spahlinger himself between *November*, 1913, and *August*, 1914." The dates are inaccurate. The first injection made with my preparations at St. George's was Feb. 23rd, 1914, and I had never entered St. George's before February, 1914. I have before me a photograph of a letter (the original of which is in my safe) from Dr. Latham to me, dated Feb. 14th, 1914, in which he says:—

"I was glad to hear that you were ready to treat some cases in St. George's Hospital. If you could meet me there at 2 o'clock on Wednesday, we could then see what cases I may have and arrange matters."

I had never even entered this hospital in 1913. I challenge Dr. Nelson to prove his claim.

"*There was about an equal number of cases treated at the same time under similar conditions, in nursing homes*," says Dr. Nelson. This is absolutely untrue, and I defy Dr. Nelson to give the names of "a number of cases" which I had treated with Dr. Latham at nursing homes.

I will proceed to deal with the individual case records quoted by Dr. Nelson, seriatim.

CASE 1.—I. H.

Dr. Nelson's quotation regarding R. lung seems wrong, as the hospital charts say "moist sounds over lower lobe of R. lung which is probably also tuberculous . . . and crepitations over R. lower lobe."

The St. George's Hospital charts contain the following:—

Feb. 23rd: First injection of Dr. Spahlinger combination of ferments and antigens given. (The chart says explicitly "*ferments and antigens*" and not serum, as is stated in error by the registrar. It will be noted that treatment started on Feb. 23rd, 1914.)

27/4/14: Sputum report says: Sputum very much less purulent than that usually received.

6/5/14: Report says: Physical signs seem very definitely drier than previously.

26/5/14: Specimen of sputum of 25/5/14 shows only 3 T.B., and these only by the antiformin method.

The registrar's notes are wrong when he says: "A course of 26 injections of Spahlinger's serum was given." None of my serum was ever used at St. George's.

This patient was discharged on June 9th. The patient, therefore, who was obviously of an advanced type (as is admitted by Dr. Nelson) had three months' antigen treatment; the last report, on which the registrar's notes are based, is dated 26/5/14, the previous injection having been given on 22/5/14. In my opinion, to obtain with antigen and ferment treatment in three months' time such improvement as is indicated by the drying up of physical signs, diminution of purulence of sputum, and almost the disappearance of T.B. in sputum, is highly satisfactory. I am of opinion that any unprejudiced expert would be satisfied with this marked improvement. Dr. Nelson says this patient has not been traced; she may be dead or still alive. To me she was reported as alive and well in 1923 when I tried to trace her. But, as I have not seen her personally nor had a letter from her, I prefer to make no statement on this point at present. All I claim is that this patient made a very satisfactory improvement in three months' treatment.

CASE 2.—A. H.

As Dr. Nelson admits that this patient was alive in 1926, the only comment I wish to make is this: Dr. Nelson's statement says that under previous gold treatment she lost 5 lb. in weight; under my treatment she gained 5 lb. To my recollection her lupus was much improved, but I have, unfortunately, no photograph to prove it.

CASE 3.—M. H.

Dr. Nelson's report quotes "early tuberculosis of larynx." St. George's Hospital records say: "Larynx, 14/1/14, considerable tuberculous ulceration affecting R. arytenoid, chiefly, and interarytenoid space." Another hospital report says: "Tuberculous ulceration extending to left arytenoid; infiltration of both aryteno-epyglottidean folds; three small tubercles on the edge of the epiglottis. Chest: Signs point to massive disease which appears to be on the point of breaking down. X ray reports: Extensive tubercular disease in both lungs. There appears to be a large cavity at the L. apex and several smaller ones scattered *throughout the left lung*."

Dr. Nelson's report says that during her course of gold treatment she lost 4 lb., but that her signs remained stationary. He forgets to quote from the hospital records the passage: "Except for more marked signs of excavation at L. apex." 13/3/14, another chart says: "Very marked signs now of excavation left upper lobe in front." 7/4/14. Next chart says: "Commenced with injections of Dr. Spahlinger's *ferments* since yesterday."

My comments on this case are as follows:—

1. She received ferments and no serum. 2. She commenced my treatment on April, 1914, and therefore could not have been under my care since November, 1913. 3. During the week preceding the beginning of my treatment she had a quantity of sputum varying from ½ oz. to 2 oz. The last six days before her discharge she had from 0–½ and then, four times, a trace. 4. Regarding sputum test, report of June 13th, 1914, signed Hunt, says:

"T.B. present. They are rather scanty compared to what was seen in sputum specimens 3 or 4 months ago." That is what Dr. Nelson calls "T.B.+ rather fewer." 5. From which chart does Dr. Nelson get his statement: "Physical signs unaltered"? If he will present the original chart I shall be greatly interested. 6. On one of the charts the last clinical examination is entered against the date April 18th. Then there is written on the same chart (about the middle) merely the date "May 2nd." All the rest of the page is blank. There is no mention of the examination which apparently ought to have been made on May 2nd. 7. One other chart, signed "J. W. L.," ends at the date May 11th. The hospital records regarding this patient are *incomplete* and badly kept. She was discharged in July.

My conclusions on this patient are: This was an advanced case; both lungs as well as the larynx were involved. The patient was treated with antigens, *therefore, she was being given active immunisation* treatment during three months and eight days. There was a loss of weight of 4 lb. With regard to the physical signs on discharge, perhaps Dr. Nelson will oblige me with the original hospital chart quoting examination on discharge. Sputum decreased from ½–2 to 0–½. T.B. decreased from numerous to scanty.

In his summary Dr. Nelson calls this case "slightly worse." I call it, if anything, better, and one cannot expect more in an advanced case with antigen treatment (active immunisation) in such a short period. I never troubled to trace this case as it had not received the full course of antigen treatment, which, in such a case, would have required several months longer. I expected the patient would be dead—not as a result of any inefficacy of my antigens, but owing to insufficient length of treatment.

It must be remembered that with serum treatment the patient receives the defences ready made by the horse, hence the rapid improvement. With the antigen treatment (active immunisation) the patient must manufacture himself his own defences; and there is, therefore, generally a negative phase. It takes a considerable time before these defences are properly trained to fight, and the time is specially long in advanced cases where very small doses of antigens must be used to avoid such disasters as those referred to at the beginning of the next case and attributed to tuberculin by the house physician.

CASE 4.—M. C.

The hospital charts contain the following: "Massive disease of upper half of R. lung with cavitation, L. lung upper lobe affected (possibly massive disease),

scattered disease throughout." Had tuberculin previous to his entry at St. George's. House physician's chart says: "The breaking down was probably due to increasing dose of tuberculin without regard to reactions." 23/2/14: "Injection of Dr. Spahlinger's ferment." May 7th: "The signs seem very definitely drier than on admission." June 4th (on discharge): "Signs still show improvement and the general condition of patient is better. The sputum averages ½ oz. daily. He is putting on weight."

Considering that the patient—

(*a*) was an advanced case with extensive disease and cavitation;

(*b*) that he had antigen treatment (therefore active immunisation);

(*c*) that on his discharge on June 4th after three months and one week's treatment, the amount of sputum had dropped from 2½–3 oz. to ½ oz. and his signs were much drier,

I consider the patient as having made a very satisfactory improvement. Dr. Nelson admits that he entered business, got on very well, married in 1917. He apparently broke down shortly after. This is quite possible, considering that he had an insufficient course of antigens to protect him.

CASE 5.—T. T.

"Case 5, T. T.," as given by Dr. Nelson, never received my treatment at St. George's or after leaving that hospital.

There was a case "No. 5.—E. T. A." which Dr. Nelson completely omits to quote. He was admitted at St. George's on March 23rd, an early case of pulmonary tuberculosis. After discharge from St. George's he received a further course of treatment. In answer to a letter of mine he wrote on 11/1/1921:—

"I was so sorry I did not see you personally before you left London to thank you personally on behalf of myself and my family for your treatment which I was fortunate enough to receive through your kindness in the year 1914. I have been in excellent health since then as regards my chest trouble (thanks be to you again). Now I am doing very hard work for 12 hours a day as luggage porter. I was pleased to see so many of your other old patients looking so well the other day, and from what they told me, they must be working about as hard as I am. Again with very best thanks, etc. . . ."

He is still alive and well. This is the type of case which ought to receive at once antigen treatment without a previous course of serum.

CASE 6.—B. M.

Dr. Nelson says: "Amount of sputum less at first, later increased." The registrar's notes, from which these remarks are copied, say: "There was a noticeable diminution of sputum during the first six weeks, but there was afterwards an increase to *former amount*." House physician's report says: "April 7th: Has lost 2 lb. Sputum has decreased. Cough much less troublesome" and "chest distinctly drier." Chart says: April 23rd: "Has lately had ordinary colds, increase of sputum, skiffiness in head, nasal catarrh." (With colds it is not surprising if patient's sputum increases to former amount. No more is said on this case.)

The registrar in his abstract says: "Course of 17 injections of Spahlinger's *serum* given without any improvement." Had he properly consulted the charts he would have read "March 16th: Treatment commenced by Dr. Spahlinger's injections of *mixed ferments*." May I point out once more that none of my *serum* was ever used at St. George's. The records are obviously deplorably kept. The same error regarding *serum* appears in the registrar's abstract of readmission.

Dr. Nelson admits that on second discharge the patient's sputum was less in amount. The registrar's notes say: "There was on an average only *a quarter* as much daily sputum as before." Dr. Nelson states: "Temperature at end of course tending to be more constantly febrile." I enclose photograph of this patient's last temperature chart at St. George's which shows that except on two days following her injections, while reaction existed, her temperature remained absolutely normal, and even subnormal, the whole time. (For five days it was normal; it rose to 102·4° F. immediately after injection, then for five other days it was normal; then again to 104° after further injection; for 12 succeeding days it was below 98·4°, which ends the chart.)

The patient was discharged on July 2nd, 1914. She wrote on July 28th, 1914:—

"I should very much like to continue with the treatment . . . . *I have much pleasure in being able to tell you I feel quite fit. In fact, I cannot remember having felt so well for some time. My temperature is below normal and my appetite is excellent. In fact, I am decidedly progressing famously. I might add I gained 3 lb. this week in weight. Trusting you will favour me with a reply as to when I can have the treatment, as I am very anxious to continue same, for I feel quite confident of a decided cure . . . .*"

The patient was examined by several doctors and by a leading London specialist on August 10th, when she had practically no active signs in chest and hardly any sputum. She had gained weight steadily since her discharge from hospital and the dyspnœa was much improved. On Oct. 23rd, 1914, she wrote:—

"I am writing to ask if I could come to Switzerland and finish my treatment . . . . after having derived so much benefit from your treatment I do not want to go back . . . ."

I enclose photographs of this patient's letter. This is a typical case of vaccine treatment; in many cases there is a negative phase (during which the patient remains stationary), followed, after a time, by marked improvement which eventually leads to recovery, provided the treatment is sufficiently prolonged. I have little doubt that if this patient had continued her treatment and received a course of antigens and ferments for one year instead of only two months and a half she would not have had a relapse and would have effected a complete recovery.

CASE 7.—J. A.

Dr. Nelson forgets to mention that the house physician's chart says: "Night sweats, severe cough with much expectoration." Registrar's notes state: "Rather severe cough with much yellow sputum, profuse and frequent night sweats." The original charts say: "There is evidence of tuberculous disease over the whole of right chest," and not only in upper two-thirds of that lung as Dr. Nelson states. He also forgets to quote: "Physical signs point to the existence of consolidation and cavities of both apices and of general infiltration of the rest of the right lung. The X ray examination showed "the left side more opaque than the right."

The house physician's report of April 18th states: "To-day he has had an injection by Dr. Spahlinger." No definite reference to what was injected is traceable on the charts. Yet the registrar says in his abstract: "During April to July a course of 17 injections of Spahlinger's *serum* were employed." Once more let me make it clear that *none* of my serum has ever been used at St. George's. If the registrar had carefully studied the charts he would have read: "26/6/14 . . . . reactions vary in severity, but all of the same type (i.e., similar to phenomena seen in tuberculin reactions)." This remark should have shown the registrar that antigens (the contrary of serum) were used.

Dr. Nelson, unfortunately, repeats the registrar's error by using in his comments the words: "Smart reactions, especially with the *serum*." This shows plainly—

1. That Dr. Nelson did not carefully read the hospital records, otherwise he would surely have seen the remarks of 26/6/14, comparing the reactions with tuberculin reactions.

2. That Dr. Nelson is not an authority on specific treatment of tuberculosis and has no knowledge of the mode of action of sera or antigens (tuberculin also is an antigen). Dr. Nelson adds "sputum decreased," but he forgets to continue "from 4 to 1 drachm daily," as is mentioned by the registrar. This is important, especially with antigens, in such short a period of treatment. Dr. Nelson says further "weight as before." This is a slight error. The

patient put on 2¾ lb. between the beginning of my treatment and discharge.

Dr. Nelson states "signs the same." Is he aware of the fact that after an antigen reaction all signs in the chest are temporarily more active on account of the focal reaction which follows? One can only give a considered opinion on signs in the chest when at least ten days have elapsed since the immediately preceding specific focal antigen reaction. The last chest examination was made the fifth day after the last reaction. (From 98·4° F. temperature went to 102° F., to drop again to 98° F. the following night.) Had this examination been made five days later I am convinced that instead of "signs the same" he would have found "signs much drier." This remark applies to all the cases quoted in Dr. Nelson's article.

Again, Dr. Nelson forgets to quote from the registrar's note, "the general condition was improved." This patient wrote to me from Edinburgh in his own handwriting on 25/11/20, saying:—

"In 1916 I started working again at the back of the counter . . . . and in 1917 after many rejections I was passed A1 for the army. Unfortunately, my people didn't want me to go and appealed to the military authorities, consequently I was discharged. Since then I have been in charge of the paper department and stationery factory, and keeping well. I can do my round of golf after business hours and have a night's dancing without feeling any the worse . . . ."

This letter speaks for itself. No comments are necessary. The patient may have died in 1921, as Dr. Nelson says. But what was the cause of death? A relapse after these six years of good health might be attributable to an insufficient course of vaccine. If it were, it would strengthen my argument that antigen treatment should be strong in early cases, or, in those more serious cases where it could not be administered in large doses it should be given over a long period.

CASE 8.—G. E.

The house physician's report states: "Pott's disease, the over-lying skin is thickened and inflamed. Some local tenderness," whereas the registrar says: "Angular deformity of lower dorsal spine with thin and inflamed skin over it." Was it thickened or thinned? Dr. Nelson states "lungs have a poor air entry at left base, otherwise not abnormal." But the hospital charts classify the patient as "caries of spine (tuberculous) and chronic pulmonary tuberculosis." House physician's report states: "Chest: No gross evidence of T.B." Another chart says: "Creps. at left base behind. X ray report, however, 'general mottling of both lungs suggesting tubercular disease.'"

The registrar's report says: "Lungs suggest tubercular infiltration at left base." The chart also mentions "losing weight." In this case also the registrar mentions that injections of Spahlinger's *serum* were given. Here again he is wrong. There is no reference to serum on any of the charts. Dr. Nelson is repeating the same error regarding sera. The registrar's notes mentioned that the patient was *slightly improved*. Dr. Nelson makes no reference to that improvement, which a specialist might call more than slight, considering that the admission chart contains the words "difficulty of turning over in bed," and that the chart of discharge says "no difficulty in walking afterwards."

On July 28th, after her discharge from St. George's, this patient wrote asking for further treatment. She said:—

"I feel sure that if I had a few more injections I should be permanently cured."

I paid her expenses for a further stay in London and she received some more injections. At the end of August her condition was as follows: No pain, local tenderness disappeared. Patient feeling stronger, able to walk without any trouble.

On August 5th, 1921, she wrote again: "My healing is certainly wonderful." No further comments are necessary.

CASE 9.—F. B.

The registrar's notes say: "Under observation for six weeks. For first three weeks he was up daily, the temperature was highly irregular and swinging, the sputum became more copious and contained abundant T.B. The signs became moister and suggested cavitation at right apex. During the remaining three weeks three injections of Spahlinger's serum were given. Each was followed by constitutional and febrile reactions and the temperature was rather less swinging and lower. He was removed by parents on June 13th before further injections had been tried, his condition being practically the same as on admission."

It is useless to comment on this case, which had only one week's antigen treatment (three injections), except: 1. To notice that here also the registrar calls my antigens "serum." 2. Why does Dr. Nelson say "only three injections of Spahlinger's cure given"? 3. The way Dr. Nelson puts the case seems to imply that the parents had removed the patient because he felt worse. The three injections of antigen he received certainly did not make him worse. The registrar says explicitly that "his temperature was rather less swinging and lower." Other symptoms *status quo*.

CASE 10.—M. O.

The registrar's note says: "She was under observation for two months. The temperature throughout was extremely irregular and signs tended to become more extensive. During June she had six injections of Spahlinger's serum, but without obvious benefit, there being progressive loss of weight and no change in amount of sputum and of T.B. therein contained." Same remarks regarding antigen, called "serum."

The patient had only three weeks' treatment. Very small injections of antigen were given on account of the severity of this case. Surely no specialist could expect such a case, when given active immunisation treatment, to show positive results in a few days, and it is ridiculous that Cases 9 and 10 have even been mentioned by Dr. Nelson. It would be better to say: "Two further cases received a few injections, but the period of treatment was too limited to permit any conclusions being made one way or the other."

Since publishing his article Dr. Nelson has made further comments on my work. "To my knowledge Dr. Latham tested innumerable 'remedies' for tuberculosis, caring hardly at all from what source they came. He found them all ineffective, including that of Mr. Spahlinger," he says. Unfortunately for Dr. Nelson this statement does not correspond with the facts, nor with Dr. Latham's opinion. The latter is expressed in a document written in his own handwriting, when he asked me in 1914 to publish a statement on the cases we had treated at St. George's. Here is the document:—

"Short scientific account of the method.

"Then a statement to the effect that a number of cases have been treated at St. George's, etc., etc., under the care of etc., etc., and that the results, although sufficient time has not yet elapsed to speak definitely, are sufficiently encouraging to warrant a thorough trial of the method."

Dr. Latham was delighted that such severe cases were responding favourably to antigen treatment, and he had asked me to call on him in order that I should publish an article on the subject. He was quite aware that the cases had not had time to be cured, hence his words "sufficient time has not elapsed to speak definitely"; yet they had made enough improvement for him to say "the results are sufficiently encouraging to warrant a thorough trial of the method."

Dr. Nelson claims that I had no right to photograph the hospital records. How absurd! Here are the facts. Three months after the war had broken out I decided to return to Geneva as my supply of antigens was running short. Supplies of serum had long before been exhausted. I asked for permission to copy the charts so as to be able to consult the records. After all that I had incurred in the work

and expenses of my researches surely I was entitled to have a duplicate of case records? Copying was taking too much time. I therefore asked for permission to photograph each sheet. I received this permission and was even helped in my work by some members of the medical staff.

Summary of Conclusions.

1. Dr. Nelson's article bristles with inaccuracies about case records, dates, and the remedies employed. In some of his quotations he omits important words or interpolates remarks of his own.

2. To the ordinary reader who rarely has time to read the whole details of the cases, and therefore glances chiefly at "conclusions," Dr. Nelson's article would convey the impression that ten cases were treated by my method for ten months, when in reality the longest period of treatment was five months. One patient had only six days' treatment and another three weeks' treatment.

3. He is wrong when he says that only one case is alive—three are alive (out of eight, not out of ten; two cases, as I have shown, are invalid for purposes of comparison).

4. He is wrong when he says that no cases were cured—three were cured.

5. He is wrong when he says that only four cases made a *slight* improvement. Immediately on cessation of treatment five cases showed considerable improvement, which eventually led in *three* of them to complete recovery. It is possible that a *fourth* case (No. 1) is also well and alive, but she was not traced lately.

6. He is wrong when he says that Cases 3 and 6 were worse. Case 3 improved and Case 6 improved very markedly, especially during the two months following her discharge from St. George's. In fact, none of the cases became worse, in spite of the fact that they were severe cases and that antigen treatment was used. This in itself is a tribute to the value of my antigens.

7. He is wrong when he states that Dr. Latham found my remedy ineffective. Dr. Latham himself stated that the results were sufficiently encouraging to warrant a thorough trial of the method. Dr. Nelson recognises that Dr. Latham was a "very learned and wise physician whose opinion in such a matter would carry almost universal conviction."

If serum treatment had been used the results would have been more rapid. Vaccine (or antigen) treatment only shows its positive results after a much longer period of time; also, the full benefits derived from the treatment are only evident when a few days have elapsed since the last injection to bring about a specific focal reaction, followed by local and general symptoms. These, which are of a temporary nature, only disappear in the course of, say, 10 to 20 days.

8. May I further quote Dr. Nelson's own words: "They are the sort of cases in which an arrest of the disease with a return to reasonable health and life on the part of several of them would have indicated the presence of a curative agent in Mr. Spahlinger's preparation . . . ." Those patients who received a course of treatment sufficient for their condition are still alive; those who had an insufficient course are dead. What better proof of the efficacy of my work does Dr. Nelson wish?

I am, Sir, yours faithfully,

H. SPAHLINGER.

Institut Bactériothérapique, Carouge, Genève,
Jan. 11th, 1927.

To the Editor of THE LANCET.

SIR,—As I was associated with the late Dr. Arthur Latham in the treatment of cases of tuberculosis with Mr. Henri Spahlinger's preparations, and as it was on my suggestion that Dr. Thomas Nelson sought out the after-histories of the cases treated, it may not be out of place for me to write a few lines commenting on some of the points raised by Mr. Spahlinger's long letter.

The cases treated at St. George's Hospital were chosen by Dr. Latham and myself together, all the injections were performed by me, full private notes (entirely separate from the hospital notes, which I was in the habit of supplementing) on the history and progress of cases were made by me for Dr. Latham, and nothing, to my knowledge, was revealed to him by Mr. Spahlinger of which I was not cognisant.

At our first interview with the latter at St. George's, Dr. Latham rightly insisted that we must know the contents of his preparation before we used it. "Your methods of manufacture," he said, "may be secret, but we must know broadly its constitution." Mr. Spahlinger replied that the preparation consisted of ferments extracted from various organs (the spleen especially) of tuberculous animals passed through a special filter of his own invention to remove "the harmful tryptic element." On several occasions during the treatment of cases at St. George's and elsewhere he handed me something evidently different to inject, which I feel sure he referred to as his "serum." Mr. Spahlinger is a foreigner, and, as the St. George's Hospital bacteriologists complained, his terminology was naturally, to our way of thinking, loose.

Dr. Latham and I asked him at the outset how long a course would be required in view of the question of beds; on this point he was never very definite, as far as I can remember, but he assured us that all the phthisical patients would lose the bacilli from their sputum in at least six weeks, and there would be such remarkable improvement that we, who were, unlike him, physicians, could then judge for ourselves. These promises of dramatic improvement were, unfortunately, not fulfilled.

I well remember another series of cases treated about the same time outside the hospital, which I watched for Dr. Latham. Fortunately, Dr. Edward Hunt, bacteriologist to St. George's, accompanied me on at least one occasion to the house where these cases were treated, and is, of course, willing to attest to the fact. I think that Mr. Spahlinger should remember this series of cases, as I always understood that he paid for the expenses of nursing, &c.—but maybe it was his father who paid and he has forgotten. Anyhow, here again he assured me that certain cases of lupus selected for treatment among others wouldbe cured in six weeks. They did not appear materially benefited in my opinion at the end of a longer period. I was genuinely sorry to have to tell him so, as he always appeared to me in those days a sincere enthusiast—and there we parted! I reported to Dr. Latham and, at his suggestion, went away for a holiday; the war came almost directly; I crossed with the Expeditionary Force; on my demobilisation I found Dr. Latham an ill man; we never resumed our intimate association in work; I never discussed the Spahlinger cases with him again, and, as all know, after a long illness he died.

Mr. Henri Spahlinger is not a qualified physician; it is often difficult for physicians of even high standing, who have not lived in chest hospitals, to appreciate fully the frequent and often long remissions which stay the downward course of the average chronic consumptive under no special treatment of any kind, and also the wonderful benefit derived from rest, especially absolute rest, in bed. Maybe none of us yet appreciate fully the effects of injections of foreign protein. Dr. Latham had not only a wide experience of pulmonary tuberculosis, but he had also that enviable gift of restrained optimism so necessary to research; he always encouraged, while he watched and waited.

One often thinks that the curative effects of any new treatment for pulmonary tuberculosis must now be dramatic to be convincing. It is now just on 13 years since I first met Mr. Spahlinger, during which time several hundreds of thousands of people have died in this country alone of tuberculosis, and the essential details of his method remain undisclosed.

I am, Sir, yours faithfully,

Harley-street, W., Jan. 24th, 1927. J. W. LINNELL.

To the Editor of THE LANCET.

SIR,—I must thank you for showing me Mr. Spahlinger's letter and giving me the opportunity of answering it at once. I will immediately give Mr.

Spahlinger credit for his only correct statement. When I used the words November, 1913, to August, 1914, this was the complete period the cases treated by Mr. Spahlinger were under observation by Dr. Latham. As is made quite clear in the detailed notes the first case was not treated by Mr. Spahlinger until February, 1914.

I commenced to answer his specific charges one by one. Where I could make out the exact nature of his grievance I soon found that the same answer applied to them all. By taking individual notes apart from their context, Mr. Spahlinger attempts to show that I have made deliberate errors in description and in fact. I see, however, on going over them again, that my much condensed accounts of very voluminous notes are all perfectly fair summaries of the history, extent and severity of the disease and changes after treatment. I was aware that I might be accused of bias, so that where I have summarised the mildly conflicting facts and reports that will occur in any notes, I always gave to Mr. Spahlinger the benefit of any doubt.

Two examples from Mr. Spahlinger's own quotations will suffice to show what I mean; to keep them to concrete facts we will take the sputum reports of the first two lung cases. In case No. 1 he makes a great deal of the "three T.B. found by the antiformin method," dated 26/5/14. Having the notes in front of him, and speaking in the interests of truth, he has not told you, Sir, that the very next report, dated June 3rd—six days before the patient's discharge—says "T.B. present, 30 to 40 per field." I did *not* take this report alone, because on studying the many and careful reports (by Dr. E. L. Hunt) as a whole, there certainly *was* a diminution of T.B. in the sputum. I made that appear, perhaps, even more so than it really was by quoting the "antiformin" report. Again, in case 3 Mr. Spahlinger seems to object to my translation of Dr. Hunt's report—which he quotes—as "T.B. plus, rather fewer." He has not the advantage of seeing the private additional reports kept by the bacteriologist in his laboratory for his own information. This very report also says: "Many fields show none, some fields show 10 to 20 bacilli singly or in little groups." Under the circumstances I think my summary is very fair indeed.

I might continue this kind of example in every case. I am not in a position to reply to Mr. Spahlinger's reference to personal relations with Dr. Latham, so I have taken the liberty of showing the letter to Dr. Linnell, and I hope you will be able to print his reply. He will also finally dispose of Mr. Spahlinger's reiterated statement that there were no cases treated in a nursing home outside St. George's. For some reason Mr. Spahlinger wishes to forget these cases; among them was the poor fellow, T. T., who died so rapidly after Mr. Spahlinger's treatment. The case of E. T. A. I was able (owing to the kindness of Dr. Leonard Williams) to show had no tuberculosis by publishing the full notes in a letter to THE LANCET of Jan. 15th. But Mr. Spahlinger, with these notes in front of him, still includes this case as a cure of tuberculosis. There can be no doubt that Mr. Spahlinger has the notes; he says so. But there is no record in the minutes of the House Committee or of the Medical School Committee that he was given leave to copy them.

Mr. Spahlinger is highly indignant with me for using the word "serum" in inverted commas, which I did twice where it occurs in the notes. Elsewhere I have used the word "preparation" or some equivalent. "Serum" was not used in any scientific or pseudo-scientific sense, for neither I—nor presumably the clerk who wrote the notes—would wish to pose as an expert in the nomenclature of secret preparations.

I would not weary you, Sir, by dealing with the inconsistencies in every line of Mr. Spahlinger's letter. He complains in one place that I have not given due emphasis to the isolated report of a lung being drier, and a few laps later says that another lung should not have been noted as wetter than it might have been if it had been less wet if examined when it ought to have been drier—at least that is the best I can make out of it. Briefly, I gather that he is really disgruntled because I have not inserted and underlined every favourable comment and suppressed every sign of deterioration in the patients.

Perhaps I had better explain Nos. 3 and 4 of Mr. Spahlinger's "Summary of Conclusions." One case is certainly alive—lupus. Of the other two Mr. Spahlinger says are alive, one is the spurious case of E. T. A.; which of the *untraced* cases he assumes to be living is not clear. Presumably it is No. 1 who, he says, was alive in 1923, but omits the simple information by which this might be verified. My inclusion of the case No. 9 was for completeness; one can argue little from it. No. 10, however, was getting so rapidly worse under Mr. Spahlinger's treatment that even he could see it and desisted.

In my original article I endeavoured not to express even an opinion that might seem prejudiced, and I made the lenient comment that "such slight indications as there are of improvement are not more than one would expect from tuberculous patients after they had been in bed for periods of time such as these were." I suppressed my own conviction that they were worse than if they had had no treatment but simple rest in bed, and much worse than if they had been kept on "absolute rest" for these periods.

I am, Sir, yours faithfully,

Brook-street, W., Jan. 24th. THOMAS NELSON.

*** We have gladly allowed Mr. Spahlinger all the space he desired, in this issue of THE LANCET, in which to reply to Dr. Nelson, whose rejoinder, along with a letter from Dr. Linnell, is printed in the same issue for the convenience of our readers. Mr. Spahlinger in some preliminary observations (which are omitted) reproaches us for not having published in 1923 an account by Dr. Ogle of the cases treated by Dr. Latham at St. George's Hospital. This account was mentioned by Mr. Spahlinger personally to a member of our staff, but was, in fact, *never submitted for publication*. His second reproach is that, since August, 1923, THE LANCET has systematically refused to publish anything referring to his treatment by those who have had actual experience of the cases, while it has published several unpleasant attacks by people who obviously did not know the facts. Yet he grants that detailed clinical records appeared in THE LANCET of that year, just prior to the date mentioned, under the names of Colbeck, Gloyne, Hudson, Lardy, Savoire, Stephani, Trechsel, and others—Dr. Nelson in his paper did us injustice, as he is good enough to admit, by overlooking these records. A résumé submitted by Dr. Leonard Williams was returned to him on August 3rd, 1923, simply because we felt, as was made clear at the time, that the case for the remedy had been stated by its advocates and that nothing further could usefully be done until a supply of it was available for extensive test under controlled conditions. Dr. Williams's paper subsequently appeared in the *British Medical Journal* which had not then dealt with the subject. That is all three years ago, but Dr. Stephani, Mr. Spahlinger's principal supporter in Switzerland, wrote to us on Jan. 15th last, stating that he had always found THE LANCET "anxious to show every impartiality concerning the sundry reports about Spahlinger's discovery . . . ." The fact is, as any unprejudiced reader may see for himself, that THE LANCET has during the last 12 years faithfully presented such clinical evidence as is available of the value of Mr. Spahlinger's preparations and has never ceased to reiterate, at the risk of being tedious, its appeal to Mr. Spahlinger to put these preparations to a convincing test of their utility.—ED. L.

IMMUNITY TO IMPLANTED TUMOURS.

To the Editor of THE LANCET.

SIR,—The points raised by Dr. Mottram were considered and settled years ago.

1. From the study of over 2000 cultures it is seen that M_{63} cells cultured in my liquid serum medium,

invariably migrate out separately and not in sheets (see Fig. 1 and Fig. 2 in my paper in THE LANCET of Feb. 21st, 1925). In solid media such as plasma, on the contrary, the appearance of sheets of cells is common.

2. That these migrating cells are indeed cancer cells is indicated by the fact that when inoculated into mice they cause cancer.

3. Every cell in Fig. 3 A is indubitably an M_{63} cell and the cells in Fig. 5 A are human cancer cells; the superficial resemblance to fibroblasts ceases to be misleading after some experience. The serological reactions, nuclear characteristics, type of granules, early migration &c., all demonstrate the malignant nature of these cells.

I should be happy to show Dr. Mottram in my laboratory the appearances of human and mouse cancer cells when cultured in a liquid medium.

I am, Sir, yours faithfully,

THOMAS LUMSDEN.

Lister Institute of Preventive Medicine, London, S.W., Jan. 22nd, 1927.

TRAUMA AND TUMOUR.

To the Editor of THE LANCET.

SIR,—May I trespass upon your space to ask if anyone has met with the development of a tumour in a wound inflicted upon a combatant during the late war? If mere traumatism can induce carcinoma or sarcoma it would be natural to expect examples from so great a wealth of material.

I am, Sir, yours faithfully,

G. LENTHAL CHEATLE.

Harley-street, W.1, Jan. 24th, 1927.

MEDICAL TEACHING ON BIRTH CONTROL.

To the Editor of THE LANCET.

SIR,—In his address to the Manchester Medico-Chirurgical Society, reported in your last issue, Dr. Giles makes a statement at variance with the experience of normal women who use contraceptives. Speaking of the mechanical prevention of the entry of spermatozoa into the uterus, he says of the devices for this purpose: "their chief virtue is that they are a source of revenue to those who sell them." As one who has never sold them and never will, but who owes her life to their use, may I, in the name of normal womanhood, point out that this misrepresentation is made by one obviously unacquainted with the profounder essentials of contraceptive knowledge and practice.

I agree with Dr. Giles that there are a number of "so-called birth-control clinics" which advise without selection of suitable cases or a discrimination of the various means of contraception. The clinic which I have founded is run on scientific lines, and is supported by many of the leading medical men and women of the day. The commercial imitators are to be deplored, but they would not have come into existence had not the Ministry of Health interfered with medicals in its employment, and hindered them from seeing that suitable contraceptive information was freely available, thus making it commercially profitable for unscrupulous firms to foist on the public expensive articles bought by trustful women who are in such misery that birth-control contrivances are the prime necessity of their lives. It is within my own knowledge that rubber and metal articles costing at wholesale prices less than a couple of shillings are retailed at prices up to three guineas each, since the higher the price the more do the poor women trust in their efficacy.

The advice on methods given by Dr. Giles in his article contributes nothing to the scientific knowledge of the subject. All and more was contained in my small popular book published eight years ago, and more fully set out in my book "Contraception—Its Theory, History and Practice," published in 1923. If Dr. Giles has learnt no more of contraception than to say "the condom plan is the best," he will not satisfy intelligent women.

Finally, I must contradict Dr. Giles's statement that the least harmful plan is the restriction of intercourse to the "safe period." Where both of the couple are normal and healthy, there is no "safe period," and where there is, its use involves the coercion of a physiologically unready woman at times, and the refusal of her at other times when she is ready for coitus, both of which are barbarous and immoral.

I am, Sir, yours faithfully,

MARIE C. STOPES,
President, Society for Constructive Birth Control and Racial Progress.

Whitfield-street, London, W., Jan. 24th, 1927.

DEATHS UNDER ANÆSTHETICS.

To the Editor of THE LANCET.

SIR,—In your annotation on my paper published in your last issue, you suggest that an increase in recent years in the number of operations of a severe type may account in part for the greater number of the anæsthetic deaths set out in the tables published by the Registrar-General. I may point out that these statistics purport to deal with "deaths under or connected with anæsthetics," and it is not clear how deaths due to the severity of an operation can be returned in this category. However, I do not think it necessary to debate this point, because the Registrar-General publishes a list every year of the number of anæsthetic deaths returned as occurring under specified operations, which shows that the great bulk of the deaths occur under operations of a less severe type, and further that these, collectively, bear practically the same proportion to the full total of the deaths in 1924 as they did in 1911. If your suggestion had any serious significance, I think it would have been reflected in these figures. I must apologise for thus trespassing further on your space, but I think that in considering the Registrar-General's returns, care should be taken to free them from any suggestion which might tend to confuse the issue.—I am, Sir, yours faithfully,

A. G. LEVY.

Manchester-square, W. 1, Jan. 24th, 1927.

STREET ACCIDENTS IN LIVERPOOL.—As reported to the police of Liverpool during 1926, there were 64 persons killed and 3937 injured. The total number of accidents was 3717, and 2538 mechanically-propelled vehicles were involved. There was an increase of 13 fatal accidents as compared with the previous year.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH.—At the opening meeting of the spring session Dr. Maitland Ramsay gave an address on Toxic Iritis. He deprecated the use of the term rheumatic iritis because, though sometimes associated with chronic arthritic states, iritis practically never occurred in rheumatic fever. He had chosen the subject, he said, because it so aptly illustrated the general principle that the cause of disease was not necessarily to be found in the organ manifesting the symptoms. Toxic iritis being a local manifestation of a general state, local treatment was essential to its relief, but cure was not obtained until general treatment removed the underlying cause and so prevented recurrence. For success general treatment must depend upon recognition of the toxic process. In many cases the focus of infection was found in the teeth, tonsils, nasal sinuses, or intestinal tract, but in others it followed after an attack of some general infection such as influenza. In some cases the source of the infection remained a matter of conjecture, and in these circumstances the iritis was spoken of as idiopathic; but it was very difficult to understand how an iritis could occur in a healthy patient. In those cases, for example, in which posterior synechia interfered with the intra-ocular circulation and tension, the local symptoms were intense. The relief afforded by iridectomy was so complete that apparent cure resulted, but if general treatment was discontinued recurrence of the inflammation in the affected or even in the healthy eye was to be expected. Operation was a confession of failure and disaster would inevitably follow if its dramatic results should lead to neglect of general treatment.

Obituary.

THOMAS CLAYE SHAW, M.D., F.R.C.P. LOND.

THE death of Dr. Claye Shaw spells the loss of a recognised leader in mental medicine, for although he had lately lived in complete retirement, he was for a long time one of the foremost figures in asylum administration, and had handled all the medical, legal, and social questions associated with mental disease and failure.

Thomas Claye Shaw was born at Stockport in 1841. His father, a chemist and earnest churchman, with a deep belief in the value of educational culture, sent his son early to London University, where he graduated in 1860 before entering on a course of medicine at King's College. He took the senior Warneford Scholarship, graduated in medicine in 1866, qualifying for the gold medal in the M.D. a year later. He commenced the study of mental diseases at Colney Hatch Asylum, then under the superintendence of Dr. Edgar Sheppard, grandfather of the late rector of St. Martin-in-the-Fields. Later he was appointed to direct the Leavesden Asylum for chronic mental cases, under the Metropolitan Asylums Board, and from there passed on to the Banstead Asylum, under the Middlesex Justices, then newly established for chronic mental disorder. This intention of the founders was happily frustrated, for exigencies of space and the demand for increased accommodation soon necessitated the remodelling of Banstead for the reception of acute patients, and it was at Banstead that Claye Shaw's life's work was begun and completed. He secured the confidence of the Middlesex Justices in such degree that he was invited to advise them, and later the London County Council, in the planning and construction of Claybury, the first modern asylum for London, where Sir William Collins afterwards established the first pathological laboratory for the scientific investigation of insanity. It was expected that Claye Shaw would have been the first director of Claybury, but he recommended for this post Sir Robert Armstrong-Jones, electing to remain at Banstead himself.

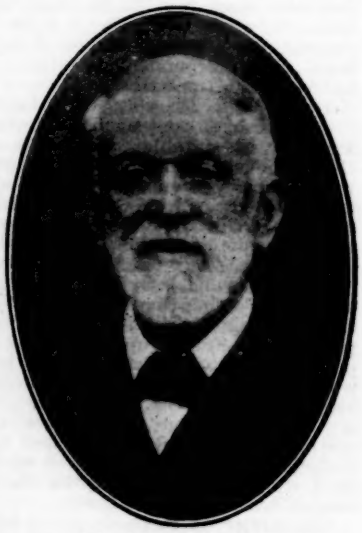
Dr. Claye Shaw's contributions to the literature of mental disease were many and varied. He frequently wrote for the medical papers on the newest currents of psychological thought, and his able and original pen relieved the pages of many lay journals in which he castigated the popular indulgences and fickle fashions of the day, especially upon the psychological side. He had faith and courage, for he was ever hopeful of seeing an out-patient department for mental cases at St. Bartholomew's Hospital, where he taught, and this hope has since been realised. The Hospital Reports owe much to him, and the Abernethian Society, which was under his special patronage. Some of his essays, collected as a volume under the title "Ex Cathedra" about 20 years ago, may still be read with pleasure for their broad, human interests. In consultation he was precise and definite, giving the family doctor just the accurate and careful instruction he needed for the treatment of an harassing case. His academic services were largely requisitioned outside the immediate surroundings of his work, for he examined in mental physiology at the University of London and for the Board of Army Medical Studies. He lectured on clinical insanity at St. Luke's Hospital, and occupied the chair of psychological medicine at St. Bartholomew's. He was an active member of the Medico-Legal and Harveian Societies, and for several years presided over the Society for the Study of Inebriety. He was largely instrumental in founding the After-Care Association, which keeps in touch with mental patients after their release from institutional treatment.

In early life Dr. Claye Shaw was distinguished as an amateur actor. Sir Robert Armstrong-Jones, to whom we are indebted for many personal details, tells us that he was extremely musical and found great pleasure in playing the organ; not long ago he contributed to the discussion in the *Times* on the healing value of music. He was an authority on the subject of the stage and was a well-known member of the Garrick Club. He spoke and read French and German fluently and was an admirer of the habit of thought shown in German psychology. Instinctively critical, and with a satirical tendency which did not permit him to suffer fools gladly, he was often regarded as antipathetic—an erroneous impression disproved by his relation to students, on whom he exerted a magnetic personality touched with a quaint and indefinable humour which never failed to kindle enthusiasm. Those who attended his early ward lectures at Banstead in the eighties, when it was his custom to carry in his hand a short cane or marshal's baton to indicate authority, will not readily forget their first insight of the insane mind. He was apt to raise questions of absorbing interest such as: What would happen if men could live their lives again, retaining their experiences of mistakes and success, with a fair knowledge of the causes that led to them? contending that it would be a tame world if the interest attached to what we now call chance ceased to exist. He attacked the "gentle dulness" of mankind, of whose existence he was often conscious, quoting with approval Wundt's declaration that people think very little and very seldom; and he delivered a courageous lecture on the special psychology of women, reaching conclusions bearing upon the rightfulness of women's claim to the electoral franchise at a time when medical men generally hesitated to express such opinions. His presidential address to the Section of Psychological Medicine at Exeter in 1907 reads now like a modern presentment of the subject, dealing as he did with the need for classification of cases in institutions and the establishment of mental clinics in connexion with the out-patient departments of general hospitals.

In his social life Dr. Claye Shaw was much helped by his wife, who was Hannah Gratrix, daughter of the late J. Ridgway, of Leavesden, who predeceased him by two years, and who bore him two daughters, one of whom is married to a medical man.

FREDERICK GEORGE LARKIN, F.R.C.S.ENG.

THE death of Mr. F. G. Larkin in his 80th year removes a practitioner of wide interests and many talents. He received his medical education at Guy's Hospital, where he became president of the Physical Society, and it was before this society that, in 1869, he read the paper on Nephrostomy and Excision of the Kidney, which opened his medical career so auspiciously. By its originality and suggestive value, this paper aroused wide interest and is said to have led to the use at Guy's Hospital of operative measures for the treatment of renal calculus and other lesions of the kidney. In recognition of this work and of the lifetime of service which followed it, Mr. Larkin in 1915



DR. F. G. LARKIN.

was admitted an honorary Fellow of the Royal College of Surgeons of England, and only a few days before he died he was gratified to see a reference to his work for renal surgery in the bicentenary issue of *Guy's Hospital Gazette*. Mr. Larkin's clear mind and confident judgment showed to advantage in the celebrated Wainwright trial of 1875, when his accurate evidence was largely responsible for the prisoner's final conviction, winning handsome recognition from the Lord Chief Justice. The care and thought which he brought to the solution of a forensic problem was also applied to his surgical work, and especially to the treatment of fractures. As a boy he was much in contact with agriculture and engineering and in his hobbies as in his work he showed a mechanical turn of mind. In later years he took a keen interest in gardening and farm work at his home at Grove Park. During most of his life, however, Mr. Larkin's especial interest was in music. This enthusiasm dated from an early association with Canterbury Cathedral, not far from his birthplace at Hoath. In early days of practice he was choirmaster at Holy Trinity Church, Southwark, and later he held the same office at St. Augustine's at Lee. For many years also he was intimately associated with Westminster Abbey, where his old friend, Sir Frederick Bridge, was organist. As deputy also he sang in the choir at the jubilee celebrations of Queen Victoria and at the coronation of King Edward and King George, and he was, himself, the composer of a number of chants and of other church music.

Mr. Larkin leaves a widow. One of his sons is Dr. Reginald Larkin, of Southwark.

JOHN WEBSTER, F.I.C.

SENIOR OFFICIAL ANALYST TO THE HOME OFFICE.

Mr. John Webster, senior official analyst to the Home Office and pathological chemist to St. Mary's Hospital, died suddenly at his home in Hanwell on Jan. 20th at the age of 49. He was born in the Midlands of Quaker stock and was educated at Mason's College—now incorporated in the University of Birmingham. Here he studied chemistry for three years in preparation for the examination of Associateship of the Institute of Chemistry of Great Britain and Ireland, which examination he passed in 1901, becoming F.I.C. in 1904. Later he acted for some years as assistant examiner to the Institute in the examination on the Chemistry and Microscopy of Food and Drugs, which is recognised by the Ministry in connexion with the appointment of public analysts. Webster's first post was that of assistant analyst to Sir Thomas Stevenson, of Guy's Hospital, who was then senior scientific analyst to the Home Office. On the death of his chief in 1908 Mr. Webster moved his laboratory to St. Mary's Hospital, where he worked under Sir William (then Dr.) Willcox, who succeeded Stevenson in his official connexion with the Home Office. In 1909 Mr. Webster was appointed demonstrator of pathological chemistry in St. Mary's Hospital Medical School, a post which he held to the time of his death in conjunction with that of pathological chemist to the hospital and assistant director of the Department of Chemical Pathology of St. Mary's Hospital Institute of Pathology and Research. In 1919, on the retirement of Sir William Willcox from this office, Mr. Webster was appointed senior official analyst to the Home Office, a post for which years of study of toxicological problems from the medico-legal aspect had made him eminently fitted to hold.

An acknowledged expert in technique, Webster's original publications were not numerous. He was always ready to place his chemical knowledge and experience at the disposal of his colleagues at St. Mary's. Whatever the pressure of his forensic duties his readiness to further the clinical applications of chemical work never failed; it is exemplified in a paper on Cæliac Infantilism, contributed by him jointly with Dr. Reginald Miller and Dr. H. Perkins to THE LANCET in 1920.

His interest in the excretion of arsenic, originally aroused by cases of poisoning, was extended to the effects of salvarsan therapy in the arsenic content of the tissues. In May, 1916, he presented to the Society of Public Analysts the results of some analyses showing the relative amounts of arsenic found in the various organs after injections of salvarsan, drawing special attention to the high percentage found in the kidneys. During the war Webster's activities were largely taken up by researches on the toxicity of trinitrotoluene, and he elaborated a simple test known as Webster's test for the presence of T.N.T. in urine which was set out in an official communication from the Ministry of Munitions (see THE LANCET, 1916, ii., 1926). The test was not difficult to perform, and when efficiently carried out demonstrated the presence of T.N.T. in varying degree in the urine of nearly all those who were working with this substance. The value of the test was twofold—first in clinching a doubtful diagnosis in clinical symptoms and secondly in watching the clearance of T.N.T. from the system after isolation from T.N.T., and judging whether the precautionary measures taken had been effective.

The general public got to know Webster's name through his evidence in connexion with many of the celebrated cases of poisoning, in which he was often associated with Sir Bernard Spilsbury, and formerly also with Sir William Willcox. This publicity was distasteful to one who was reserved and retiring in private life, his chief recreation being music. Mr. Webster was popular with the students at St. Mary's and was always ready to help in planning and conducting the musical part of any programme arranged by students' societies. He will be missed alike by students and colleagues.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 15TH, 1927.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 675 (last week 342); scarlet fever, 1493; diphtheria, 1109; enteric fever, 36; pneumonia, 2016; puerperal fever, 58; puerperal pyrexia, 131; cerebro-spinal fever, 9; acute poliomyelitis, 15; acute polio-encephalitis, 4; encephalitis lethargica, 41; trench fever, 1; dysentery, 8; ophthalmia neonatorum, 140. There was no case of cholera, plague, or typhus fever notified during the week.

The cases of small-pox were reported from the following counties: Derby, 28 (2 from Derby, the remainder from six urban and rural districts); Durham, 349 (6 from Gateshead, 2 from South Shields, the remainder from 26 urban and rural districts, the highest figures being Shildon 50, Chester-le-Street 47, Lanchester 34, Brandon and Byshottles 33, Easington 32, Hetton 20, Crook 19, Jarrow 19, Auckland 16, Willington 13, Sedgefield 10); Hereford 1 (Dore R.D.); Lancaster, 11 (10 from Southport, 1 from Lytham St. Anne's); Lincoln, 4 (Gainsborough); Northumberland, 10 (6 of these from Newcastle); Nottingham, 5 (Sutton-in-Ashfield 4, Misterton R.D. 1); Yorks North Riding, 1 (Middlesbrough); Yorks West Riding, 266 (157 from Sheffield, 1 from Bradford, the remainder from 12 urban and rural districts, the highest figures being Doncaster 42, Mexborough 29, Keighley 15, Swinton 9, Thorne 7).

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 34 (0) from measles, 6 (2) from scarlet fever, 64 (20) from whooping-cough, 38 (7) from diphtheria, 46 (7) from diarrhœa and enteritis under two years, and 326 (137) from influenza. The figures in parentheses are those for London itself.

SUSSEX PROVIDENT SCHEME.—The Sussex Provident Scheme for hospital and specialised medical services continues to grow. Its headquarters are at Brighton, and the scheme is one by which payment of £1, £1 10s. or £2 a year entitles single persons, married couples, or families to full benefits from the coöperating local hospitals. During 1926 these hospitals received £7750, compared with £6377 in the previous year. A similar scheme has been adopted in the Crowborough district.

THE TREATMENT OF NON-TUBERCULOUS INFECTION OF THE LUNGS.

DISCUSSION AT THE ROYAL SOCIETY OF MEDICINE.

A SPECIAL meeting of the Sections of Medicine, Surgery, and Laryngology was held on Jan. 25th, with Dr. HUGH THURSFIELD, President of the Section of Medicine, in the chair, when a discussion on this subject was opened by Dr. L. S. T. BURRELL, who dealt with

Bronchiectasis, Abscess of the Lung, and Pneumomycosis.

The treatment of *bronchiectasis*, he said, must depend on its severity and must not expose the patient to greater risk than the disease. A cause, such as foreign body, should be sought and removed if possible, and simple measures, such as posture and inhalation in a creosote chamber, should be tried before more elaborate methods. Artificial pneumothorax was successful for unilateral disease, but usually there was too much adherent pleura to permit of collapse. Phrenic avulsion had not proved valuable in his cases. In expert hands good results followed aspiration and washing out the cavities through a bronchoscope. Thoracoplasty should not be lightly undertaken, as the excellent results in a few cases were balanced by disappointment in the majority. Drainage relieved the patient for a time. Lobectomy was very dangerous, but partial lobectomy by cautery, though still in its infancy, seemed promising. Pneumolysis —stripping the pleura and inserting wax or fat—had not proved very successful.

Acute abscess often yielded to rest, posture, and hygiene, but after a month pneumothorax was indicated and should not be delayed lest adhesions form. The lung might be re-expanded after a few weeks and collapsed again if symptoms recurred. After a time it could be expanded without producing symptoms. The yeast cells so often seen in the sputum came only very rarely, in Dr. Burrell's opinion, from the bronchi or lung. Fungi might cause lung disease with signs and symptoms like those of tuberculosis or carcinomatosis. Mycelia were found in the sputum, and large doses of potassium with pneumothorax caused rapid improvement.

The Surgical Treatment.

Mr. A. TUDOR EDWARDS said thatthe X ray appearance of a chronic *simple abscess* was characteristic; the diagnosis should not be confirmed by aspiration unless the pleuræ were adherent; lipiodol rarely entered the cavity because of the swelling of the bronchial mucosa. Of surgical measures artificial pneumothorax was more useful at an early stage, especially where the abscess was so near the hilum that drainage was made risky by the large vessels. At the periphery it might break down adhesions and infect the pleura; for these cases drainage should be performed at once under local or intratracheal anæsthesia. External drainage for five or six weeks was the ideal treatment, but should only be undertaken after careful X ray localisation. When the pleura was free it should be rendered adherent by packing with iodine gauze four or five days before the pneumotomy. The incision should be vertical to allow resection of a rib above or below if necessary, and the tract should be oblique to allow easy closure. Drainage through the bronchus was rarely adequate, and repeated aspiration should be tried for an abscess near the hilum. Larger abscesses gave rise to a good deal of fibrosis and secondary bronchiectasis as they healed, and phrenic avulsion was therefore needed in some cases to avoid subsequent thoracoplasty. *Bronchiectatic abscess* and the communicating bronchi were clearly shown up by lipiodol; all cases should be investigated by the bronchoscope to eliminate the presence of foreign bodies. Lavage was rarely satisfactory, but pneumotomy had given encouraging results. It should be a more extensive procedure than for simple abscess; all pockets should be opened up and the cavity lightly packed. Phrenicotomy or thoracoplasty might be required to close the cavity later.

X rays and lipiodol injections were very important in the diagnosis of *bronchiectasis*; bronchoscopy should be a routine procedure. Unilateral cases could be treated in several ways. Artificial pneumothorax was only of permanent benefit in the very early stages and drainage had been abandoned. Bronchial lavage might greatly improve or cure in many instances, and bronchostomy occasionally ameliorated the condition. Phrenic avulsion prevented the establishment of the condition after other diseases, but did not cure. Thoracoplasty gave good results, but the affected areas were sometimes too rigid to collapse. Those cases which gave temporary good results with artificial pneumothorax were likely to be cured by thoracoplasty. He had only tried cautery pneumectomy in two cases and lobectomy in one. The latter would be the ideal procedure if the technique were improved.

Endoscopy.

Mr. G. EWART MARTIN said that the use of the bronchoscope was now beyond the experimental stages and had recently been much simplified. He compared it with cystoscopy, and illustrated its value in two cases of foreign body which had been diagnosed as tuberculosis and bronchiectasis. It caused no ill effects and required no anæsthetic save slight spraying of the epiglottis with cocaine. American bronchoscopic clinics found a very much higher proportion of foreign bodies than observers in this country, and it seemed that the possibility was too often forgotten. The removal of a foreign body gave a 90 per cent. cure of its accompanying infections. The few contra-indications to bronchoscopy were recent hæmorrhages, high fever, concurrent severe heart infections, and acute toxæmia. Postural coughing would not empty cavities which could be sucked dry by the bronchoscope. Cases of bronchiectasis with similar symptoms did not respond to the same type of treatment, and each case must be taken individually. Mr. Martin described the method he had used and the fate of the 31 cases he had treated by aspiration followed by a weak boracic wash-out. The percentage of cures was small in these chronic cases, but nine of his series had had no more trouble. There had been three complete failures, and in all of these there had been multiple cavities with toxæmia. Sixteen were still under treatment and all showed marked improvement, and were strikingly grateful for the aspiration and lavage.

Dr. K. D. WILKINSON confined his remarks to bronchiectasis, most of which seemed to follow influenza or pneumonia in childhood. Since far more cases occurred among hospital patients, it might be that infections of the teeth, tonsils, or nasal sinuses played an important part. There was no definite dividing line between bronchiectasis and bronchitis, though a well-marked case could be diagnosed easily. The milder cases did well as a rule. The three best measures were postural drainage where this could be insisted on twice or thrice daily for long enough; creosote inhalations or Lee's drops, and vaccines. He was doubtful if pneumothorax offered real hope of effective treatment. He described three patients in whom the lung had been drained or cauterised, and hoped that some safe and more speedy method of dealing with the diseased lung would be devised. The diagnostic value of lipiodol could not be over-estimated.

The Laryngologist's Point of View.

Mr. C. A. S. RIDOUT said that his experience had been limited to chronic bronchiectases, in which he found that bronchoscopy benefited those cases in which radiography revealed a definite area in one or both lungs. He described a case in which suction only was used on the earlier occasions, lavage later, and once the introduction of a drachm or two of

10 per cent. argyrol. He thought suction was the main factor in producing improvement, and agreed with Dr. Martin's account of the relief afforded by the procedure. The technique was as follows: The patient has the fauces and pharynx swabbed with 20 per cent. novocain for five minutes, then 5 per cent. cocaine is swabbed over the epiglottis and glottis. The patient lies with head extended, and Jackson's bronchoscope, smeared with 1 per cent. cocaine ointment, is introduced—there is generally some spasmodic cough as the tube is passed into the trachea and left bronchus—and 1 per cent. cocaine is applied on a mop holder through the bronchoscope. A water or electrical suction tube empties the right bronchus of pus which is generally present. When pus is seen exuding from the middle lobe bronchus a sucker with spiral spring end, which can be made to enter any lateral bronchus after exit from the bronchoscope, is introduced and further pus evacuated. Then, removing the tubing from the sucker and connecting the latter with an irrigator, and at the same time inserting alongside of it another suction tube, the cavity is irrigated with warm boracic lotion. When the patient shows signs of distress the apparatus is withdrawn, the patient sits up and coughs out the excess of fluid.

The Importance of Prevention.

Mr. J. E. H. ROBERTS said that the advanced type of case ought not to occur; it was a confession of the failure of early treatment. Neither the surgeon nor the physician could cure advanced bronchiectasis. Prophylaxis was not sufficiently considered; certain conditions were known to predispose to bronchiectasis, and patients suffering from them were turned out of hospital and not seen again until it had developed. They should be very carefully watched, and measures such as vaccines, avulsion, removal of foreign body and pneumothorax, should be carried out early. When the early stages of bronchiectasis had established themselves, the physician, surgeon, radiologist, and bronchoscopist should coöperate as a team. Nearly all cases were unilateral at the beginning; when lipiodol had confirmed the diagnosis and a course of some months' treatment had proved unavailing, surgery should be called in. He agreed that phrenicotomy was not curative except in the early stages, but thought it should always be done as a preliminary to other collapsing operations. It nearly always improved the patient's condition and so reduced the risk of subsequent procedures. Thoracoplasty had given very good results in early cases, but failed in advanced ones, although it might be of great value as a palliative. Grave consideration must be given before the dangerous operations of cauterisation, with its mortality of 20 per cent., and lobectomy, in which the mortality was 50 per cent. Lobectomy was necessary in cases where there was associated sepsis beyond the limits of the bronchial tree; these did not do well after collapsing operations. The general line of treatment should be a surgical crescendo. He showed slides of a case which had been cured by removal of a collar stud from the bronchus. The man had been X rayed several times before, but always in his shirt and vest, and the stud had been taken for a button.

Dr. F. G. CHANDLER said that non-tuberculous fibrosis was usually the result of broncho-pneumonia or whooping-cough, more rarely of occupation, foreign body, or pressure. When possible the cause should be dealt with, and general health must be built up to avoid infection. Vaccines might be useful or very dangerous. For a progressive case artificial pneumothorax was the best measure, releasing the bronchi from traction for a year or two. Failing this, 500–1000 c.cm. of oil of gomenol might be injected. The treatment of bronchiectasis depended on the type, localisation, and extent. The advanced bilateral basal "glove-finger" type could only be palliated; less advanced cases improved under postural treatment, creosote and inhalation. Unilateral cases could be treated by pneumothorax. Phrenic avulsion was another method he preferred to try before resorting to rib-mobilisation or thoracoplasty. Oil of gomenol might be tried. Some cases of lung abscess cured themselves, other called for pneumothorax, but the best course was drainage, provided the pleura was or could be made adherent at the site of operation. If the walls would not approximate after drainage, phrenic avulsion should be performed. Lipiodol would not enter a chronic abscess, and so formed a useful agent in differential diagnosis.

In answer to a question by the President, Dr. Chandler explained that gomenol was a French preparation of paraffin oil with eucalyptus in it.

Exploratory Operation.

Mr. H. S. SOUTTAR quoted two illustrative cases. The first showed the importance of excluding foreign body. The patient said her troubles dated from choking on a piece of mutton bone some months before. Bronchoscopy revealed a minute piece of bone in a mass of granulation tissue beneath a large abscess. Removal practically cured her. He was strongly in favour of exploration of the chest as a primary procedure. It was safe and caused little trouble to the patient, and the condition of the lung could be made quite certain; if a piece of hard non-collapsible lung were encountered the production of a cavity in it by low temperature cauterisation gave the best results. With due precautions the procedure was not dangerous and was certainly most effective. Aspiration was most dangerous unless the pleura was known to be adherent.

Mr. V. E. NEGUS described his experience of a hundred bronchoscopies; the operation was easy and caused only four or five minutes' discomfort to the patient, who could go home alone after it. It was therefore suitable for out-patients, and was at any rate worth trying first. In his experience foreign bodies were rare. He showed slides illustrating a case in which suppuration had been caused by a fibroma in a secondary bronchus. Cure had followed its removal through the bronchoscope. He also showed diagrams explaining how swelling of the bronchial mucosa in bronchiectasis upset the normal mechanism so that the bronchus was obstructed in expiration, and no amount of coughing could expel the pus. For this reason he regarded dilatation and swabbing with silver nitrate as the essential parts of bronchoscopic treatment. The bronchi were held open by the tube so that clear drainage was possible. The surgeon could tell at the third or fourth treatment whether or not bronchoscopy would do good. The only adverse results he had known were a death after injection of lipiodol, and loss of a swab temporarily in a bronchiectatic cavity. He had injected both gomenol oil and iodoform, but they had, if anything, made the patients worse.

The Importance of Septic Foci in Chronic Bronchitis.

Dr. GEOFFREY MARSHALL said that the respiratory defences against infection were very good, but might be broken down by the failure of the nervous mechanism to prevent inhalation of a foreign body, by gross structural changes, and by repeated invasions of pathogenic organisms from a focus of infection outside. He advocated thoracoplasty or artificial pneumothorax for pulmonary abscess. The role of the pulmonary surgeon was a very limited one, but lung abscess he should certainly treat, and also a few cases of limited bronchiectasis. Surgical measures caused far more chronic pulmonary disease than they controlled. The immediate results of rib resection and tube drainage for empyema were admirable, but 50 per cent. of cases had some chronic lung trouble afterwards. The tube should be sealed off by a watervalve even within the 24 hours. He urged the importance of thorough investigation of cases of chronic bronchitis, and quoted a number of patients in whom the discovery and removal of pus in the accessory sinuses had cleared up bronchitic conditions of many years' standing. Bronchitis in the upper lobes was invariably associated with sepsis in the nose, throat, or sinuses.

Collapse induration of the lung might also be cured by removal of septic foci.

The PRESIDENT remarked on the change that had taken place of recent years; a little while ago the physician had implored aid from all sorts and conditions of people, and neither surgeon nor laryngologist would help him; now they blamed him for not sending these cases to them early enough. He thought that the laryngologist's position was the one most likely to come to the fore, since he could form for himself a picture of the disease, which had been quite impossible up to a few years ago. Washing out the dilated bronchi appeared to be a promising measure, especially for those serious conditions which sometimes might develop even in a few days.

Dr. E. STOLKIND referred to a case, published by him in 1912, of a child who brought up stinking pus after repeated attacks of pneumonia. Cauterisation was unsuccessful, and the autopsy revealed part of a horn ring at the bifurcation of a bronchus. He recommended pneumothorax for chronic pneumonia.

Mr. TUDOR EDWARDS, in reply, said that phrenic avulsion provided permanent cure for those cases which still had fibrosis after pneumothorax and were liable to recrudescence of symptoms. It was characteristic of bronchiectasis that collapse of the lung took place slowly, and would never occur at an exploratory operation. He did not think Mr. Souttar's case was a true bronchiectatic abscess. It might be three months before the collapse was complete. Phrenicotomy, together with aspiration, might cure some cases when either alone would fail. He had had an empyema tube made with a flange so that a negative pressure could be set up at once.

Mr. MARTIN, replying, said that lipiodol could be injected into an abscess through the bronchoscope. If it were introduced per os or through the cricothyroid membrane it met such a pressure of air in the trachea that the oil was broken up into tiny droplets which would stick on any little abrasion, giving the appearance of a cavity. Bronchoscopic injection then gave quite a different appearance.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On Thursday, Feb. 3rd., at 5 P.M., Mr. H. W. Carson will give a lecture on Complications of Gall-stones. This is the second lecture of the series on Emergencies in Medicine and Surgery. A special demonstration in clinical surgery will be given by Mr. H. J. Paterson at the London Temperance Hospital on Monday, Jan. 31st, at 2 P.M., and on Thursday, Feb. 3rd, at 5 P.M., at the Royal Westminster Ophthalmic Hospital, Mr. Elmore Brewerton will speak on Non-Paralytic Squint and its Treatment. At the Royal Northern Hospital on Tuesday, Feb. 1st, at 3.15 P.M. Dr. W. H. McKinstry and Dr. P. O. Ellison will give a demonstration on Laboratory Methods in Clinical Medicine. All these lectures and demonstrations are open to members of the medical profession without fee. On Monday, Jan. 31st, St. John's Hospital will begin a four weeks' course in dermatology. Daily instruction will be given and lectures will be held on Tuesdays and Thursdays. Practical pathological demonstrations can be arranged, the fees being £1 1*s.* for the clinical course and lectures and £4 4*s.* for the pathology. The London Lock Hospital is holding a four weeks' course in Venereal Disease, from Feb. 7th to March 5th, consisting of clinical work daily in the afternoons and evenings and special lectures at intervals (fee £3 3*s.*). On Feb. 7th an all-day course in Children's Diseases will begin at the Paddington Green Hospital and the Victoria Hospital for Children (fee £3 3*s.*). From Feb. 21st to 25th the Royal Northern Hospital will hold a practitioners' course in General Medicine and Surgery, with sessions at 2.15–3.15 P.M. daily. There is no fee for this course. The Special Courses in March will include the following: Diseases of the Chest, the Brompton Hospital, all day, fee £4 4*s.*; Diseases of Children, Queen's Hospital, all day, fee £3 3*s.*; Gynæcology Chelsea Hospital for Women, mornings and/or afternoons, fee £5 5*s.*; Ophthalmology, Royal Eye Hospital, afternoons, fee £1 1*s.*; Orthopædics, the Royal National Orthopædic Hospital, all day, fee £2 2*s.*; and a practitioners' course at the London Temperance Hospital, late afternoons, fee £1 1*s.* Practical courses in Anæsthetics and Obstetrics can be arranged and arrangements can be made for clinical assistants. Syllabuses of the Special Courses, the General Course Programme, and copies of the *Post-Graduate Medical Journal*, may be had from the Secretary of the Fellowship at 1, Wimpole-street, London, W. 1.

Medical News.

UNIVERSITY OF WALES.—At examinations in the undermentioned subjects the following candidates have been approved:—

Medicine.—1924*: Ann Ceinwen Evans, Florence May Wallen. 1927: Thomas Jones (Clydach).
Surgery.—1926*: Ann Ceinwen Evans, Thomas Jones, and Florence May Wallen. 1927: One candidate satisfied the Examiners, but, in accordance with the Regulations, publication of the name is withheld pending completion of the qualifying scheme for the degrees of M.B., B.Ch.
Obstetrics and Gynæcology.—1926*: Thomas Jones.
Obstetrics and Gynæcology.—1927: Ann Ceinwen Evans, Florence May Wallen, and one other candidate.
*Supplementary list.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, and ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The following candidates have passed in the whole or part of the Triple Qualification Examination:—

FINAL EXAMINATION.

Eric Alva Ynyr MacKeown, Amolak Singh Arora, Henry William Bambridge, Hector Timothy Joseph Abeyesundere, Siva Ratnam Carthegasam, Emma Hughes, Abdalla Abdel Razzak, John Hubert Sturges, Robert Jordan Ormsby, Arthur Mahavidane Kulatillake, Samuel Caller, Robert Gordon Paul, Elias George Marcus, Edward Patrick Kelly, Lucy Winifred MacDougall, Don Francis Jayamaha, Ian Gordon Sutherland, Hyman Taylor, Bennet Austen Van der Gert, Robert Robertson MacGibbon, Aly Kouchouk, Harold George Hebard, Ronald Alexander Paton, Charles Frederick Schilling, Archer Wilson Dunn, Donald Ross, Owain ap Vychan Jones, Lamahewage Martin de Silva, Sarukkali Patabendige Bandulasena Gunawardena, Patrick John Bourke, and Samson Amarsairi Gunawardana.

Medicine.—Vishveshvar Nath, John Williams, John Hall, Orry Smedley Crowthers, Joseph Eugenius Didacus Mendis, James Thambyiah Amarasingham, Abran Basil Gilston, John James Craig, Reuben Abrahams, Jayawickrema Simon Fernando, and Kripa Ram Bali.

Surgery.—Atal Behary Paul, Orry Smedley Crowthers, Matthew Clayton-Mitchell, John Drummond Cooper, Thomas Galbraith McIntyre, John James Craig, and Kanakkumar Dhar.

Midwifery.—Atal Behary Paul, Vishveshvar Nath, John Williams, James Gilchrist, John Hall, Mohamad Mahmoud Farghaly, Orry Smedley Crowthers, Matthew Clayton-Mitchell, Thomas Galbraith McIntyre, Alexander Lipschitz, Jayawickrema Simon Fernando, Daniel Joseph McKenna, and Kripa Ram Bali.

Medical Jurisprudence.—Alexander James Pinkerton, Douglas James Campbell, Sunderdas Tulsidas Sodah, Norman Webster Laing, Reginald Andries Ferdinand Maasdorp Saunders, John Pullar Logan, William Moodie, Violet Dorothy Hunter, Robert Gow McInnes, James Williamson Galloway, Ian MacGilvray Chisholm, and Nutting Stuart Fraser.

UNIVERSITY OF DURHAM COLLEGE OF MEDICINE.—The second lecture on the History of Medicine will be given by Dr. Charles Singer, of University College, London, at the College of Medicine, Newcastle-upon-Tyne, on Friday, Feb. 11th, at 4.45 P.M. All medical practitioners in the neighbourhood are invited to attend.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—An Infant Welfare Conference is to be held at Newcastle-upon-Tyne from Feb. 10th–12th under the auspices of the Society's Maternity and Child Welfare Group. Dame Janet Campbell, senior medical officer to the Ministry of Health, will preside, and amongst those who will take part are Dr. A. F. G. Spinks, Dr. H. Glen Davison, Dr. J. A. Stephen, Dr. T. Y. Findlay, Mr. F. C. Pybus, Dr. Mabel G. Brodie, and Mr. Harvey Evers. The Lord Mayor and Council will entertain the conference to luncheon on Feb. 11th, and there will be visits to child welfare centres and other institutions in the neighbourhood. Any practitioner wishing to attend the whole or part of the conference should communicate with Dr. A. F. G. Spinks, 20, Victoria-square, Newcastle-upon-Tyne, who is in charge of the arrangements.

NATIONAL HOSPITAL, QUEEN-SQUARE.—A Post-Graduate Course on Diseases of the Nervous System will be held at the hospital from Jan. 31st to March 25th. It will consist of clinical lectures and demonstrations, teaching in the out-patient department, and pathological demonstrations, and the fee will be 5 guineas. A course of lectures on the Anatomy and Physiology of the Nervous System will be arranged if there are sufficient applicants (fee 2 guineas), and there will also be a series of clinical demonstrations, chiefly on Methods of Examination of the Nervous System (fee 2 guineas). Tickets entitling the holder to attend the out-patients' clinic only (2 guineas for three months) may be had from the Secretary, and a limited number of students can be enrolled as ward clerks. Applications should be addressed to the Secretary of the Medical School, National Hospital, Queen-square, London, W.C. 1.

HARVEIAN SOCIETY OF LONDON.—A clinical meeting will be held at Paddington Green Children's Hospital on Thursday, Feb. 3rd, at 4.30 P.M. Tea will be served before the meeting.

ROYAL INSTITUTION.—On Tuesday, Feb. 1st, at 5.15 P.M., Prof. Julian Huxley will begin a course of six lectures on Animal Growth and Development.

HUNTERIAN SOCIETY.— The annual dinner of this Society will be held at the Hotel Victoria, Northumberland-avenue, on Thursday, Feb. 10th, at 7.15 for 7.30 P.M. The Lord Chief Justice, the Lord Mayor of London, and the Lady Mayoress will be amongst the guests.

ASSOCIATION OF PUBLIC VACCINATORS OF ENGLAND AND WALES.—The annual general meeting of the Association will be held to-day, Friday, Jan. 28th, at 3.30 P.M., at the Grand Hotel, Manchester. Dr. James Bennett will give an address on the Pending Changes in the Administration of Vaccination. An address by Dr. F. P. Sarjant, the President-elect, will follow.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.—The annual general meeting of the Association will be held at 11, Chandos-street, Cavendish-square, W. 1, on Friday, Feb. 4th, at 5 P.M. (Tea 4.30 P.M.) Dr. James Collier will deliver an address entitled Some Personal Impressions upon the Symptomatology and Diagnosis of Poliomyelitis.

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.—The Thirteenth Annual Conference will be held at the British Medical Association House, Tavistock-square, London, on June 30th and July 1st. The address of the National Association is 19, Tavistock-square, W.C. 1.

ROYAL SOCIETY OF ARTS.— At a meeting of the Indian Section to be held to-day, Friday, Jan. 28th, at 4.30 P.M., an address on Forecasting and Control of Cholera Epidemics in India will be given by Sir Leonard Rogers. Sir Michael O'Dwyer, formerly Lieutenant-Governor of the Punjab, will preside.

BRITISH INDUSTRIES FAIR.—This Fair, organised by the Department of Overseas Trade, will be held at the White City, Shepherd's Bush, London, from Feb. 21st to March 4th, the Birmingham section being held at Castle Bromwich between the same dates.

RONTGEN SOCIETY.—A general meeting will be held at the British Institute of Radiology, 32, Welbeck-street, London, W., at 8.15 P.M., on Thursday, Feb. 3rd, and not on Tuesday, Feb. 1st, as was previously arranged. Dr. J. Woodburn Morison will read a paper describing the new radiological department at the Royal Infirmary, Edinburgh, and Mr. H. D. Griffith will read a paper on the Physics of Carbon Arc Therapy.

ROYAL SANITARY INSTITUTE.—A Congress will be held at Hastings from July 11th to 16th under the presidency of Sir William Joynson-Hicks, the Home Secretary. A lecture will be given by Sir William Willcox on Chronic Rheumatism in its Relation to Industry, and there will be a series of sectional meetings and conferences.

JEWISH DRAMA LEAGUE.—A dramatic reading of of "Professor Bernhardi," by Arthur Schnitzler, is to be given by the League on Sunday, Feb. 13th, at the Little Theatre. The action of the play takes place in a large hospital in Vienna. Of the 22 characters, 18 are doctors and one is a nurse. Tickets will be available to members only, and particulars of membership may be had from Mr. C. Landstone, 35, Cranley-gardens, Muswell Hill, London, N. 10.

THE LATE DR. J. C. UHTHOFF.—The death occurred at Bournemouth on Jan. 19th, at the age of 70, of John Caldwell Uhthoff, M.D. Lond., F.R.C.S. Eng., who was until recently one of the best-known physicians practising in Brighton and Hove, and President of the local branch of the British Medical Association. Educated at Brighton College, he studied medicine at Guy's Hospital, and qualified in 1877. Two years later he graduated as M.D. Lond., and in 1881 became a Fellow of the Royal College of Surgeons. At Guy's he won a considerable reputation both in his work and as an athlete. Settling at Hove he soon acquired a large practice. Appointed physician to the Royal Sussex County Hospital and the Sussex Eye Hospital, he made a special study of diseases of the eye, and became widely known as a specialist. His advice was often sought by the judges of the local county court circuit with whom he sat as assessor. About 12 years ago he took into partnership Dr. Frederick (Eric) A. S. Hutchinson, who, by tragic coincidence, died suddenly on Jan. 6th whilst on holiday in Switzerland. Dr. Uhthoff retired from practice in the summer of 1921 and went to live at Bournemouth. He was twice married. His first wife was the daughter of the late Mr. Charles King, formerly of North Lodge, Enfield, and his second a daughter of the late Mr. F. G. Cuningham, of Bentley House, Hants.

WOLVERHAMPTON HOSPITAL SATURDAY FUND.—This fund last year reached the "record" sum of £14,357, notwithstanding that the thickly populated district served by the hospital has been very hard hit by the industrial depression.

GLASGOW STUDENTS' COLLECTION FOR CHARITIES.—The annual carnival for the benefit of local charities (carried out by nearly 4000 students of the University of Glasgow) realised about £14,300, being nearly £4000 more than last year's record. Nearly £3000 of the total was realised by the sale of a special magazine, while about £8000 was collected in the form of copper coins.

GRAVESEND HOSPITAL.—This hospital has just expanded its name to "The Gravesend and North Kent Hospital." There are 70 beds and the annual statement records that the wards are "most hopelessly overcrowded and that the out-patient department is utterly inadequate." The new patients in 1926 were 21 per cent. more than in 1925, which itself was a "record" year, and enlargement has become imperative.

SPINNERS' CANCER.—At an inquest held at Oldham on a spinner, aged 78, who had died of epithelioma (male-spinner's cancer), Dr. A. Smith said that 18 cases of spinners' cancer had passed through her hands during 18 months' experience at the Oldham Union Hospital. The verdict recorded death from epithelioma arising out of his employment.

BRADFORD MUNICIPAL HOSPITAL.—The Health Committee of Bradford Corporation has granted facilities to the workers connected with the welfare scheme of certain local firms whereby these men, by the payment of 1s. per annum to a benevolent fund, are able to insure themselves and their dependents against charges for treatment at the Municipal General Hospital. A socialist member of the Board of Guardians proposed that the Health Committee should be recommended to grant similar privileges to all who might apply, but the motion was rejected by a majority of one. The cost of running the hospital last year was £100,000, of which £52,000 was met by the Corporation and £42,000 by the Guardians, the balance being made up by patients' payments.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Feb. 1st.—5.30 P.M., ORTHOPÆDICS. (Cases at 5 P.M.). Clinical Meeting. Cases will be shown. 8.30 P.M., PATHOLOGY. Laboratory meeting at the National Hospital, Queen-square, W.C. 1. Dr. D. McClean and Dr. E. O'Flynn: The Application of the Kahn Test to the Cerebro-spinal Fluid. Dr. E. Weston Hurst: The Production of Hepatic Cirrhosis by Manganese. Dr. J. G. Greenfield: The Occurrence of Hæmofuscin in Nerve Cells. Dr. E. A. Carmichael: Some Types of Cerebral Glioma. Dr. J. G. Greenfield: Hortega Cells and their Pathological Alterations. Specimens of tuberous sclerosis and diffuse sclerosis will also be shown.

WEDNESDAY.—5.30 P.M., TROPICAL: DERMATOLOGY: THERAPEUTICS. Special Discussion on The Treatment of Leprosy. Speakers: Dr. J. M. H. MacLeod, Dr. J. H. Sequeira, Dr. Graham Little, Dr. G. Pernot (Dermatology), Dr. T. A. Hendry (Therapeutics), Dr. E. Muir, Dr. H. W. Wade, Dr. C. B. Lara, Sir Leonard Rogers (Tropical), and other speakers.

FRIDAY.—5 P.M., LARYNGOLOGY. (Cases at 4 P.M.). Cases will be shown by: Mr. Walter Howarth, Dr. Dan McKenzie, Mr. T. B. Layton, Mr. Herbert Tilley, Mr. N. Stuart Carruthers, Mr. Norman Patterson, and others. 8.30 P.M., ANÆSTHETICS. Paper. Mr. S. R. Wilson: Physiological Bases of Hypnosis and Suggestion with Special Reference to Anæsthesia.

SATURDAY.—10.30 A.M., OTOLOGY. (Cases at 9.45 A.M.). Papers. Dr. C. P. Symonds: Cerebral Abscess; some points in Diagnosis and Localisation. Dr. Farquhar Buzzard: The Treatment of Traumatic Facial Paralysis. Cases and specimens illustrating these subjects will be shown by: Mr. T. H. Just, Mr. C. Gill-Carey, Mr. R. J. Cann, Mr. W. H. Ogilvie, Mr. E. Watson-Williams, Mr. Sydney Scott, Mr. W. M. Mollison, Mr. G. W. Dawson, Mr. R. D. Owen and Mr. T. B. Layton.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, JAN. 31st, to SATURDAY FEB. 5th.—*FELLOWSHIP OF MEDICINE. Special lecture at the Medical Society, 11, Chandos-street, W., at 5 P.M., on Thurs. Mr. H. W. Carson: Complications of Gall-stones.—

*LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W. Special Clinical Surgery demonstration on Mon. at 2 P.M., by Mr. Herbert J. Paterson.—*ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, Charing Cross, W.C. Special clinical ophthalmic demonstration at 5 P.M., on Thurs., by Mr. Elmore Brewerton, on Non-Paralytic Squint and its Treatment.—BETHLEM ROYAL HOSPITAL, S.E. Tues. and Sat., at 11 A.M., Lecture-Demonstrations on Psychological Medicine.—NATIONAL HOSPITAL, QUEEN-SQUARE, W.C. Special Course in Neurology. Daily instruction and special lectures. Further information from the Fellowship Secretary.

*Open to all members of the medical profession without fee.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hosptial, Tottenham, N.

MONDAY, Jan. 31st.—10 A.M., Surgical Clinic. 2 P.M., Medical Cases in the Wards. 2.30 P.M. to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY, Feb. 1st.—2.30 P.M. to 5 P.M., Medical, Surgical, Throat, Nose, and Ear Clinics. Operations.

WEDNESDAY.—2.30 P.M. to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinic. 2.30 P.M. to 5 P.M., Medical, Surgical, and Ear, Nose, and Throat Clinics. Operations.

FRIDAY.—10.30 A.M., Throat, Nose, and Ear Clinics. 2.30 P.M. to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, Jan. 31st.—10 A.M., Mr. MacDonald: Genito-Urinary Operations. 2 P.M., Mr. Addison: Surgical Wards. 4 P.M., Mr. Tyrrell Gray: Peritonitis and Obstruction.

TUESDAY, FEB. 1st.—10 A.M., Medical Registrar: Clinical Methods. 12 noon, Dr. Burrell: Chest Cases. 2 P.M., Mr. Sinclair: Surgical Out-patients.

WEDNESDAY.—10 A.M., Dr. Owen: Medical Diseases of Children. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2.30 P.M., Mr. Armour: Surgical Wards.

THURSDAY.—12 noon, Mr. Simmonds: Demonstration of Fractures. 3 P.M., Sir Henry Simson: Gynæcological Wards. 4 P.M., Dr. Snowden: The Conversion Neurosis.

FRIDAY.—11 A.M., Dr. Pritchard: Modern Methods in Medicine. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Department.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Mr. Banks-Davis: Operations of the Throat, Nose, and Ear.

Daily.—10 A.M. to 5 P.M., Operations, Medical, Surgical, Special, Out-patient Departments (Saturdays 10 A.M. to 1 P.M.).

POST-GRADUATE HOSTEL, Imperial Hotel, Russell-square, W.C.

MONDAY, Jan. 31st.—6.30 P.M., Annual Meeting of Vice-Presidents and those interested in Post-Graduate work. 9 P.M., Sir Arthur Robinson: Our Duty to Colonial Visitors.

NATIONAL HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, Queen-square, W.C.

MONDAY, Jan. 31st.—2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Dr. Riddoch: Some effects of Head Injuries.

TUESDAY, Feb. 1st.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Risien Russell: Syphilis as it affects the Nervous System.

THURSDAY,—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Walshe: Polyneuritis.

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Mr. Elmquist: Demonstration of re-education methods in Exercise Room.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Feb. 3rd.—4 P.M., Mr. Higgins: Demonstration of Surgical Cases.

ROYAL NORTHERN HOSPITAL POST-GRADUATE COURSE.

TUESDAY, Feb. 1st.—3.15 P.M., Dr. W. H. McKinstray and Dr. P. O. Ellison: Demonstration of Laboratory Methods in Clinical Medicine.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Feb. 1st.—5 P.M., Dr. S. E. Dore: Alopecia.

THURSDAY.—5 P.M., Dr. A. M. H. Gray: Xanthoma. Herpes.

ROYAL DENTAL HOSPITAL SCHOOL OF DENTAL SURGERY, Post-Graduate Lectures.

WEDNESDAY, Feb. 2nd.—5.30 P.M., Dr. E. W. Fish: Art and Stability in Full Denture Prosthesis.

ST. MARGARET'S HOSPITAL FOR WOMEN, Acomb-street, Whitworth Park, Manchester.

WEDNESDAY, Feb. 2nd.—4.15 P.M., Dr. N. C. Haring: Tuberculosis.

PEOPLE'S LEAGUE OF HEALTH. (Sims Woodhead Health Lectures).

MONDAY, Jan. 31st.—6 P.M. (at the Medical Society of London, 11, Chandos-street, W.). Prof. H. E. Roaf: Anatomy and Physiology.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.

FRIDAY, Feb. 4th.—3.30 P.M. (at the Royal Hospital). Mr. Graham Simpson: Surgical Cases.

Appointments.

BROCKLEHURST, G. L., M.B., B.S. Lond., has been appointed Medical Officer of Health for Canterbury.

CALLUM, A., M.D., Ch.B. Aberd., and MACKENZIE, J. A., M.B., Ch.B. Aberd., Honorary Surgeons to the Victoria Hospital, Burnley.

EVANS, MARY, M.B., Ch.B., D.P.H. Manch., Assistant Medical Officer of Health for Hyde.

JENNINGS, N., M.B., Ch.B. Edin., Surgeon to the Hull Trinity House.

STEEL, J. P., M.B., Ch.B. Edin., Assistant Medical Officer of the Cleveland Mental Hospital, Middlesbrough.

Vacancies.

For further information refer to the advertisement columns.

Adelaide University, South Australia.—Elder Professorship of Anatomy. £1100.

Aylesbury, Royal Buckinghamshire Hospital.—Secry. £300.

Banchory Sanatorium.—Med. Supt.

Birmingham General Hospital—Med. Reg. and Res. M.O. £155.

Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. At rate of £120.

Bradford, Municipal General Hospital, St. Luke's.—H.P.'s. and H.S.'s. Each at rate of £200.

Bradford Royal Eye and Ear Hospital.—H.S. £120.

Bristol Dispensary.—Non-Res. M.O.

Bristol Eye Hospital.—H.S. £150.

Cairo University.—Prof. of Bacteriology. £E.1500.

Cambridge, Addenbrooke's Hospital.—Hon. Asst. P. for Electrical and X Ray Dept.

City of London Hospital for Diseases of Heart and Lungs, Victoria Park, E.—Asst. S.

Colchester, Essex County Hospital.—H.P. Also Asst. H.S. £150 and £120 respectively.

Coventry City.—Asst. School M.O. £600.

Derby, Derbyshire Education Committee.—School Dentist. £500–£550.

Elizabeth Garrett Anderson Hospital, 144, Euston-road, N.W.—Children's P.

Gloucester, Gloucestershire Royal Infirmary.—H.P. and Asst. H.S. At rate of £150 and £120 respectively.

Home Office, Whitehall, S.W.—Medical Inspector of Factories, £600, with bonus.

Hospital for Sick Children, Great Ormond-st., W.C.—Cas. O. £400.

Indian Medical Service.—Special Recruitment, 1927.

Inverness, Northern Infirmary.—Sen. H.S. £120.

Liverpool County Borough.—Jun. Asst. Sch. M.O. £600.

London Jewish Hospital, Stepney Green, E.—Asst. S. to Ear, Nose and Throat Dept.

National Hospital, Queen-square, W.C.—Registrar. £200.

New Zealand, Mental Hospital Dept.—Sen. Asst. M.O.'s. At rate of £775.

Northampton General Hospital.—Two H.S.'s. Each at rate of £150.

Oldham Royal Infirmary.—H.S. At rate of £200.

Oswestry, Shropshire Orthopædic Hospital.—Jun. H.S. £150–£250.

Queen's Hospital for Children, Hackney-road, E.—Cas. O. At rate of £100.

Rochester, St. Bartholomew's Hospital.—H.P. At rate of £200.

Royal Free Hospital, Hunter-street, W.C.—Registrar. £50.

St. Thomas's Hospital, S.E.—Surg. to Out-patients. Also Res. Asst. S.

Shrewsbury, Berrington Hospital.—Asst. Res. M.O. £200.

Shrewsbury, Royal Salop Infirmary.—H.S. £250. Also H.P. £160.

Southampton, Royal South Hants and Southampton Hospital.—Hon. Asst. P.

Southampton County Borough.—Asst. M.O.H. £600.

South Shields, Ingham Infirmary.—Jun. H.S. £150.

Stafford, Staffordshire General Infirmary.—H.P. At rate of £150.

University College Hospital Medical School, University-street, Gower-street, W.C.—Demonstrator in Bacteriology. £250.

Walthamstow, Hospital for Infectious Diseases, Chingford.—Res. M.O. £300.

Willesden Urban District Council.—Asst. M.O. £600.

The Chief Inspector of Factories announces the following vacant appointments for Certifying Factory Surgeons: Walsall (Staffs), Portsoy (Banffshire), Rhynie (Aberdeenshire), Fenny Stratford (Bucks), and Dumbarton (Dumbartonshire).

Births, Marriages, and Deaths.

BIRTHS.

COOPER.—On Jan. 21st, the wife of Gerald K. Cooper, M.B., of Rotherwick-road, N.W., of a daughter.

MARRIAGES.

BARNARD—POLLOCK.—On Jan. 20th, at St. George's, Presbyterian Church, Bexhill-on-Sea, James Miller Barnard, M.B., B.S. Lond., to Winifred Pollock, M.R.C.S., L.R.C.P., elder daughter of Mr. and Mrs. John Pollock, The Red House Bexhill-on-Sea.

DEATHS.

BAKER.—On Jan. 20th, at the Middlesex Hospital, A. de Winter Baker, M.R.C.S., L.R.C.P., of Dawlish, Devon, aged 74.

HOLMES.—On Jan. 17th, at The Grove, Etwall, Derby, Alfred Hewston Holmes, M.D., aged 69.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE USE OF THE SOY BEAN IN HUMAN NUTRITION.

BY T. R. PARSONS, M.A. CAMB., B.SC. LOND.,
ASSISTANT PROFESSOR FOR MEDICAL RESEARCH, THE MCGILL UNIVERSITY CLINIC, ROYAL VICTORIA HOSPITAL, MONTREAL, CANADA.

THE requirements of a diet that shall be adequate for the nutrition of human beings may be stated very concisely. The food must include sufficient of a well-balanced mixture of carbohydrates and fats to provide by its oxidation all the energy required for both the internal basal processes of the body and for the external physical work that the body performs; it must contain also sufficient of such proteins as on digestion yield in appropriate proportions the amino-acids that the tissues require for the replacement of their loss during "wear and tear" and for any growth that may be taking place; and lastly, it must contain small but sufficient quantities of the vitamins and salts necessary for continued health. In actual practice, of course, the diet of an individual is determined not merely by physiological considerations such as these, but also by economic considerations of the relation between the cost of various foods and his own earning capacity. In recent times this sociological aspect of the problem of nutrition has claimed a certain amount of attention, and a considerable mass of useful information relative to the economic as well as to the physiological foundations of the science of dietetics has been lately collected together in a very available form by Mottram.[1] It is the object of this article to supplement this information by giving similar particulars for a foodstuff that promises to rival all others not only with regard to physiological nutritive value, but also as regards economic availability.

Source and Properties of the Bean.

The soy bean has been known in China for thousands of years, but it is chiefly in Manchuria that its cultivation has developed during the last half century. From here it is exported in enormous quantities to China and Japan, where it plays a part in the national nutrition commensurate with that played by rice. This fact in itself would suggest that the bean contains materials of very definite value for the maintenance of the human body, and this suggestion is borne out by the results of chemical analysis and physiological experiment.

Chemical analysis shows that on an average the soy bean contains 35 per cent. of protein, 18 per cent. of fat, and some 27 per cent. of water-soluble non-nitrogenous extractives which are mostly dextrins and sugars. The percentage of starch is surprisingly low, amounting to only 0·5 in the ripe bean. The fat is characterised by a relatively high percentage of lecithin. A glance at these figures is sufficient to reveal the fact that soya is a veritable "wonder plant," for a seed of such composition would appear to constitute a foodstuff of extraordinary physiological value and completeness. And feeding experiments with animals have confirmed this view.

McCollum [2] states that the proteins of the soy bean are distinctly more valuable from the point of view of nutrition than are those of other legumes such as the pea, but claims that the soy bean proteins are no better than those of cereals when fed only in such quantities as those in which cereal proteins, on account of the large amounts of fermentable carbohydrate that grains contain, can be administered. But other workers, in particular Daniels and Nichols [3] and Osborne and Mendel,[4] who have made a special study of the soy bean, have come to the conclusion that the soy bean proteins are quite exceptional among the proteins of leguminous seeds in general in being completely adequate for normal growth and reproduction and rearing of young. The first-named authors concluded that the proteins of soya are quite as valuable as the casein of milk, and they all point out that the soy bean seems further to be unique among seeds in containing both fat-soluble and water-soluble growth-promoting vitamins. Its ash is deficient in calcium and in chlorides, and although these can be readily supplied from other sources this fact has to be borne in mind in feeding experiments in which the bean is used.

Its Employment as Food.

In spite of these promising results in animal experiments it must be admitted, however, that the attempts made up to the present to popularise the soy bean as a staple article of diet for Europeans have met with little or no success. One such attempt was made in Germany during the late war, but it was found that the consumption of the beans in quantities sufficient to supply the nutritional needs of man led to digestive disturbances and other disagreeable after-effects, so that the diet could not be tolerated for any length of time (Lüthje).[5] In these experiments the beans were served after prolonged boiling as is usually the case with other leguminous foodstuffs. The reason why the Eastern peoples, who regularly consume large quantities of soya, do not experience the same disagreeable symptoms is probably that they eat the beans only after they have been subjected to a process of fermentation lasting several months, during which period the constituents that are responsible for the harmful effects are decomposed. But the resulting product is not one that appeals to the general European palate. At the present time, therefore, the soy bean is used in this country chiefly as a source of vegetable oils and as a cattle food. The only application it finds for human nutrition is in the preparation of the condiment to which it gives its name.

Recently, however, the problem of the utilisation of the valuable constituents of soya for human food has entered on a new phase, for Berczeller, working in Vienna, has devised a special process of milling combined with fractional distillation whereby the obnoxious constituents can be removed and a meal of high nutritional value obtained. This special soya meal forms a slightly yellowish flour of agreeable and appetising appearance and a faint almond-like taste. It differs from the product obtained by the simple milling of the bean in its complete freedom from bitter flavour and in its capability of being stored practically indefinitely without turning rancid. From the following table giving the composition of the new meal it will be seen that the nutritional value of the bean is completely retained in the milled product:—

	Per cent. in the dried flour.
Raw protein	45·50
Protein soluble in pepsin-hydrochloric acid	40·75
Fat	22·38
Lecithin phosphoric acid	0·145
Non-nitrogenous extractives (sugars, &c.)	27·16
Ash	4·31

The meal as ordinarily obtained contains 8·97 per cent. of moisture. Berczeller has shown [6] that animals fed exclusively on soya products show a marked preference for this new meal over the whole untreated beans and also over ordinary soya meal, and he found further that the animals that showed the longest duration of life under his experimental conditions were those that consumed the largest quantities of the new product.

Relative Cost.

The problem of rendering available for human nutrition the stores of valuable materials contained in the soy bean appears thus to be solved. It remains now to consider the economic factor mentioned in the opening sentences of this article and to determine the cost of this new product as compared with that of other staple foods. The price of the soy bean was quoted recently [7] at £11 2*s.* 6*d.* a ton in Hull. From this figure we estimate the cost of the new flour as follows:—

	£	*s.*	*d.*
Cost of one ton of soy bean in Hull	11	2	6
15 per cent. loss in milling	1	13	4½
Cost of milling	4	0	11
Wholesale price per ton of soya flour	16	16	9½
Add 20 per cent. for retail price	3	7	4
Retail price of soya flour per ton	20	4	1½

which works out at less than 2½*d.* a pound.

Now the energy value of this flour has been found to be 4730 calories per kilo, this high value being determined mainly by the large percentage of fat that the material contains. If we take 3*d.* a pound as a maximum retail price we find that the cost of 1000 calories in the form of soya meal is just less than 1½*d.* For comparison with this figure we quote from Mottram's tables the following data, which include all the common articles of diet that provide 1000 calories at present-day English prices at a cost less than 3*d.*:—

Food.	Cost per 1000 cals.	Food.	Cost per 1000 cals.
	d.		*d.*
Vegetable margarine	2½	Bread, brown	2½
Oatmeal	1½	,, germ	2½
Rice	2½	,, white	2
Wholemeal	1½	Sugar	2½
White flour	1½–1¾	Haricot beans	1½
Macaroni	2½	Peas, dried	2½
Spaghetti	2½		

From these figures it will at once be seen that the only serious competitor of the new product with regard to cheapness of calorie is furnished by haricot beans, that the soya calorie is slightly cheaper than that of wheat flour, and that it is very decidedly cheaper than the calories furnished by the other fat and carbohydrate foods from which we ordinarily supply our energy needs.

When we consider soya meal from the point of view of the supply of the 30 g. of biologically suitable protein that the adult human organism requires per day the economic

advantages of a soya diet become even more striking. Again, taking 3*d.* a pound as the retail price of the new flour, and assuming that this as bought contains 36 per cent. of protein, it is easily calculated that the cost of the daily ration of 30 g. of protein is approximately ¼*d.* And again quoting and calculating from the data given by Mottram we give the following figures for comparison :—

Food.	Cost of 30 g. protein.	Food.	Cost of 30 g. protein.
	d.		*d.*
Beef (imported) ..	4½–5	Milk	5½
Lamb „ ..	4 –4½	Cheese	4½
Mutton „ ..	3 –5¼		
		Bread, white ..	2½
Cod	5½	Oatmeal	1½
Haddock	5	Flour, white ..	1¾
Herring, fresh ..	2¾	Haricot beans ..	¼
„ kippered ..	4½		

Again, we find that the haricot bean is the only food that can supply proteins at a cost approximating in cheapness to that of the soya meal. The proteins of oatmeal cost three times and those of bread five times as much. But it must be remembered that in the case of the haricot bean we have calculated the cost from that of the whole unmilled seed and also that there is no evidence that the proteins of this seed possess the unique biological value demonstrated for those of the soy bean in the experiments of Osborne and Mendel and of Daniels and Nichols already referred to. It is well known that the proteins of the cereals are deficient in this respect.

Conclusion.

The considerations put forward in this article suggest very strongly the desirability of instituting a large-scale investigation of the possibilities of an article of diet whose introduction bids fair to constitute an even greater advance in the problem of national nutrition than was occasioned by the introduction of the potato as a staple food, and of thus providing an opportunity for the realisation of the prophecy made many years ago by Haberlandt [8] that the carbohydrate stores of the potato would ultimately come to be supplemented in the diet of at least the poorer classes by the proteins and fats provided in such abundance by the soy bean.

References.

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MEDICAL INSTRUCTION FOR MISSION WORKERS.

Livingstone College, in Leyton, continues its valuable work of instructing missionaries of all denominations and nationalities in the elements of healing and hygiene. The lecturers teach elementary physiology and anatomy, practical medicine and surgery, and tropical medicine. In addition to the regular courses, which occupy nine, six, or three months, there is a four weeks' vacation course in July and three three-day courses every year on the care of health in the tropics. Seventy-seven students attended during the year 1925–26, seven of these taking the full session. The College paid its way except for about £35, and the receipts totalled £57 more than the year before. The value of even a little sound medical training to a worker among primitive people is enormous, as anyone knows who has lived in the tropics and seen the reverence with which the natives regard a person who can cure their yaws, splint their fractures, and dress their spear-wounds. The missionary societies heartily commend the work done at Livingstone, and those interested in the progress of tropical dependencies could hardly support a better object.

THE PHOTOGRAPHIC ANNUAL.

PHOTOGRAPHY is taking year by year an increasing place in the study of medicine. Radiology is largely dependent upon it and microphotography has received a great impetus now that it is known that the photographic plate may reveal structures not appreciated by the retina. A proportion of medical men and women will, no doubt, be willing to accept technical help without becoming expert themselves, but radiology and microscopy will be advanced by those who are skilled in photographic technique. We have just received the sixty-second annual issue of the *British Journal Photographic Almanac*, which contains an epitome of progress during the past year both in materials and methods, together with working details of practically every photographic process with which the keen worker is likely to come in contact. The addition of a selection of the best exhibition pictures of the year, produced in photogravure, enhances the value of the almanac, which is published at 2*s.* by Messrs. Henry Greenwood and Co., 34, Wellington-street, London, W.C. 2

A BOARD OF GUARDIANS' DECISION.

AT a recent meeting of the Romford Board of Guardians there was a discussion upon the recommendation of the Hospital Committee that Dr. W. S. O'Loughlin, medical superintendent of the Oldchurch Hospital, should be allowed to place his name on the list of the Essex Insurance Committee as a panel doctor for the resident staff. The Ministry of Health had been consulted and had sent particulars as to the position. Mr. H. C. Price said he thought it was only right that the superintendent should receive the fees for this work. At the present time others were getting the money, while he was doing the work, and the Board had to find the drugs for nothing. Under the new proposal the guardians would be none the worse off and the doctor would be a little better off, while they would also be paid for their drugs. Mr W. H. Goodchild expressed the opinion that as the doctor was a whole-time officer the money received in respect of panel patients should go into the Guardians' exchequer, and he proposed that this be done. Mr. J. A. Parrish seconded. The Chairman, Mr. E. G. Bratchett, thought Dr. O'Loughlin should have the fees. They could not compel him to do the work. After further discussion it was decided that the guardians should have the fees.

BAY MOUNT, PAIGNTON.

THE Fourth Annual Report (1925) of this institution for the cure of alcoholics, drug addicts, and neurasthenics shows that Dr. Stanford Park's energy and initiative are bearing fruit. Bay Mount was designed only for seven patients to ensure the fullest possible individual attention, but so many suitable patients were turned away that in 1925 an annexe was built for seven more, and the medical and nursing staffs were increased. The home was, therefore, able to admit 37 new patients in the year. All but four were men: Twenty-six were alcoholic cases, four were drug-takers, four neurasthenic, and three addicted to both drink and drugs. Sixteen had been in homes before. Defining "cure" as the removal of all alcoholic craving so that it will not return unless stimulated by alcohol, Dr. Park claims to have cured in 1925 91 per cent of the patients classed on admission as probably curable, and 47 per cent. of those classed as probably incurable. Even old chronic cases who only came to be "patched up" have given very good results. The medicinal treatment consists of hypodermic injections combined with bitter tonics every two hours. Dr. Park has no faith in the atropine method and is giving more and more attention to the psychological aspect and to providing occupation and interest for each individual patient. All the neurasthenics and five out of the seven drug cases did well. Elderly drug addicts suffer little, it is found, during reduction, but tend to manifest great sexual excitement and loss of emotional control afterwards.

DOGS AND RESEARCH.

THE Royal Society for the Prevention of Cruelty to Animals allows itself occasionally a vivacity of propaganda which is too much for some of its more reasonable supporters. It is now exploiting to the full the conviction of a man at Bow-street last November for feloniously receiving two Irish terriers, though it is not able to congratulate itself upon the success of subsequent and similar proceedings against a member of the University College staff. A photograph of the two terriers now appears upon a leaflet circulated by the Society as an invitation for signatures to a petition to Parliament for the grant of facilities for the passing of the Dogs' Protection Bill. The leaflet is headed "Dogs Stolen for Physiological Research Purposes." There may be prospective signatories whom this leaflet will persuade to believe that research workers take an active interest in violating the laws of larceny. It may still be worth while to reiterate that experiments upon animals are conducted only under Government licence and only by approved persons in approved places; they are subject to independent inspection by Government officials, who have reported that they are conducted with humanity; finally, they have contributed materially and at many points to the alleviation of human suffering.

MANCHESTER ROYAL EYE HOSPITAL.—The number of out-patients treated at the hospital during 1926 was 31,066, a decrease of 424, and of the numberin-patients 2371, a decrease of 22 as compared with 1925. The average number of accidents dealt with daily was 23.